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RISK ALLOCATION IN CONSTRUCTION CONTRACTING

BY

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FORWARD

Great risks are inherent to the construction industry. How well these risks are managed will ultimately determine the success of a project. Old attitudes of avoiding any risk to the greatest extent possible by, "sticking it to the other guy"[1], are giving way to concepts of risk sharing. Although construction risk tends to be perceived from a negative aspect, those that are successful in the industry also look upon it as an opportunity.

This report will examine the origins of construction risk, how to identify and classify it, and make recommendations on how to treat it. A series of risk sharing guidelines will be presented which can be applied to the allocation process. The purpose of this report is to show that a rational, systematic approach must be used to deal with risk in construction contracting. One such structured approach used to quantify and assess construction risk is presented in detail. Three of the more controversial contract clauses will be discussed in terms of their risk among the project participants.

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1. Richard Korman and Steven W. Setzer, "Sticking it to the Other Guy", Engineering News Review, (226:38-39), May 20, 1991.

CHAPTER I

INTRODUCTION

1.1 Risk Defined

Risk is a simple fact of life and impossible to avoid. Virtually any undertaking involves some degree of risk, as some measure of uncertainty accompanies every decision we make. Risk can be defined as, "...the exposure to the chance of occurrences of events adversely or favorably affecting project objectives as a consequence of uncertainty."[2] Like gambling on a game of chance, in some respects construction contracting is a form of risk taking. The very nature of the industry dictates that no two construction projects are exactly alike. For this and a variety of other reasons, great risks are inherent to doing business in the construction industry.

1.2 The Value of Risk

A rational and systematic approach to managing risk is essential to success in construction contracting. Although success can be defined in a number of ways, one cannot dispute that, for a contractor, 'turning a profit' must in

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2. Jamal F. Al-Bahar and Keith C. Crandall, "Systematic Risk Management Approach for Construction Projects", Journal of Construction Engineering and Management, (116:534), September, 1990.

some way factor into the formula. Just as any prudent business person must be mindful of the time value of money, almost any element of a project can in some way be expressed in monetary terms. Evaluating risk and its potential impact are no different. Ignoring or mistreating risk can have devastating financial results on any one of the parties involved in a construction project. How construction risks should be apportioned among, or allocated to, the interested parties is a contentious issue in construction contracting. Too many contract disputes which eventually end up in court can be traced to some aspect of risk retention or transfer.

1.3 Origin of Risk

Contract documents are the primary vehicle governing the assignment of specific risks. Others include legislative action and statutory regulations, judicial case law precedent, and customary industry practice. As with any contractual relationship, construction contracting formally assigns certain risks and liabilities to one or more of the parties in privity. Although the purpose of such a contract is to document the mutual intent of the parties at the time the contract is formed, many potentially devastating risks may lie well hidden in the specific wording of the contract. The courts are consistent in adhering to the parole evidence rule, which bars any prior verbal agreements between the parties from superseding the actual language of a contract.

Therefore, the old adage, "Read before you sign!", cannot be overemphasized.

1.4 The Incentive of Risk

If construction risk can have such dire consequences, why would anyone be willing to assume it? Obviously, the prospect of potential reward provides the motivation or incentive to induce one to take a risk. Although there is always a chance an adverse outcome may result from working on any given project, a competent contractor can still realize a respectable profit. Since most construction risks can be quantified in terms of monetary value, risk and profit are inextricably interrelated. Although the owner, architect-engineer and contractor's participation in a project may be based on different objectives, they need not necessarily be mutually exclusive or competing.

1.5 Participants to a Construction Contract

A number of entities can play a role in a construction project. Each one shares, to one degree or another, the risk involved in bringing it to fruition. The main participants to the event typically include: the owner or grantee, the architect-engineer, the contractor, subcontractors, material suppliers, trade unions, the surety and the insurer. There are a number of contract arrangements possible depending on the contract delivery method employed. The

provisions of each contract delineate how the risks are to be allocated to each of the parties in privity. Nearly every line of the contract in some way allocates some type of risk. However, some areas are more sensitive than others to the improper assignment of risks and liabilities to the parties involved. The contract's General Conditions clauses contain much of the language which dictates the contractual responsibilities of the respective parties.

CHAPTER II

BID CONTINGENCY

2.1 Bid Contingency Defined

It has been often said, "Nothing is free." This particularly is true when an owner indiscriminately attempts to shed risk to other parties. Owners tend to underestimate the magnitude of a contractor's bid contingency. An unreasonable shift of an uncontrollable risk to the contractor inevitably bears a substantial hidden cost. This cost manifests itself as a bid contingency. "...for risks that are within the contractor's control, contingency amounts will be at a minimum. For risks that are beyond the contractor's control, contingency amounts can approach the full cost of occurrence of the risk. The owner pays for the risk whether it occurs or not. If the risks do not occur, the contractor realizes more profit".[3] Since ultimately the public pays for the cost of most major construction, it is within the public interest that the construction process proceed as efficiently as possible. Thoughtful risk allocation is the key to promoting and enhancing the overall efficiency of any construction project.

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3. Madenburg, R. S. and M. C. Humphrey, "Participation Cooperation Eases Project Risk Management", Power, (130:77), June 1986.

2.2 Insufficient Contingency

In a highly competitive bidding environment, a hungry contractor may be willing to take on a risk disproportionate to any added bid contingency. Theoretically, the owner may benefit from this strategy should the risk event actually occur. The stage could then be set, however, for a contentious battle with a desperate contractor now more likely to lose money on the project. Any prospect of a continued cooperative atmosphere between the owner and contractor is remote because the contractor will probably resort to inflated claims, dodging contractual requirements, and sacrificing the quality of work in a concerted effort to recoup his or her losses.

2.3 Owner's Risk

A complete shift of all risk from the owner to a contractor is virtually impossible because some of the owner's risks are simply not delegable. The basic risk of the business venture, of which the construction project is merely a part, is created and largely retained by the owner. Therefore, it is essential that an owner develop a risk philosophy which contains specific risk allocation objectives. The owner typically has the greatest ability to determine how and if certain risks are to be shared among the contracting parties. Shifting the full burden of a risk

to another party causes "...the other contracting party to bear the full consequences of unanticipated events".[4] The speculative costs of such events are likely to be reflected in a contractor's bid contingency. From the owner's viewpoint, "...the contingency is the price paid (now) to avoid (the) future risk of additional costs".[5] Therefore, the owner may choose to retain certain risks he might otherwise shift to the contractor, with the prospect that the contractor may reduce his contingency and offer a lower bid price.

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4. Kozek, Jeffrey B. and Craig G. Hebberd, "Contracts: Share the Risk", Water/Engineering and Management, June 1989, (136:21).

5. Kozek, p. 21.

CHAPTER III

EXCULPATORY CONTRACT LANGUAGE

3.1 Enforceability

Exculpatory contract language is used to transfer a risk entirely from one party to another. The misuse of such clauses runs counter to the concept of risk sharing and tends to be a telltale sign of misallocation of risk. Such clauses can sometimes violate public policy by raising the specter of unconscionability. The courts have repeatedly denied enforcement of exculpatory contract language, which attempted to shift much of an uncontrollable risk to a contractor, on the grounds of unconscionability. This effectively meant that owners paid for these risks twice, once in the contractors' bid contingencies and again in court. This environment "...brought about a gradual replacement of the risk of unexpected cost with the certainty of unnecessary cost."[6] However, the 'winning' contractor's bid contingency will in all likelihood not fully reflect the respective risk, because a contractor who wins no contracts will not stay in business for long.

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6. American Society of Civil Engineers, Construction Risks and Liability Sharing, Vol. I (New York, NY: American Society of Civil Engineers, 1979), p. 51.

3.2 Change Order Insurance

Although in the long run exculpatory contract clauses are not in the mutual interest of either the owner or the contractor, some of the reasons why they still appear in contracts is worthy of discussion. Unfortunately, overall project efficiency and cost may not necessarily be the overriding goal in the pursuit of a project. With respect to some public agencies' accounting practices, knowing the up front costs of a project may take on considerable importance in the budgeting process. Hasty project design and or lazy project management can also be factors. Certain work items may be somewhat difficult to define contractually and it may be 'easier' to include an unexpected cost as a bidder's contingency now, rather than deal with a messy contract change after award. In sense, this practice amounts to change order insurance. Since the costs of this contingency is likely to be well hidden in the overall cost of a project, the deep pockets of the owner will pay for the insurance against a project administrator having to do more work at a later date. The professional ethics of an engineer who engages in such practices should be brought into question.

3.3 Contractual Conflicts

Sometimes conflicts occur between contract clauses and requirements incorporated by reference. "during the design

phase of a construction project, an Engineer will typically prepare a set of contract documents consisting of detailed specifications and drawings. Also included is a set of General and Special Provisions, which describe the legal-contractual terms and conditions of the contract."[7] Some owners may require the engineer or contract administrator to include specific clauses in the contract documents by separate agreement. All too often, however, the designing engineer is not well versed in the potential pitfalls of contradictory contract language. "[A] contractually unsophisticated engineer [may be unfamiliar with] the intricate regulatory requirements which accompany each grant."[8] Conflicting contractual requirements are a leading source of protracted contract disputes. Therefore, it is incumbent upon the engineer to exercise great care in preparing the contract documents to avoid such inconsistencies. "by thoroughly reviewing and coordinating mandated clauses with the standard General and Special Provisions, the Grantee will ensure consistency and avoid conflicting contract language which inevitably leads to dispute."[9] Inappropriate exculpatory language inserted into a contract may conflict with other clauses or provisions incorporated by reference.

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7. Kozek, p. 20.
8. Kozek, p. 20.
9. Kozek, p.20.

Under such circumstances, a shortsighted attempt to shift certain risks to the contractor can have disastrous consequences. An owner's erroneous reliance on the disclaimer can inadvertently forestall a timely resolution to a dispute and result in a number of substantial unproductive additional costs which he or she may ultimately be found liable for in court.

3.4 Hold-Harmless Provisions

Economies of scale may dictate certain inherently shared risks be allocated entirely to one party through a specific kind of exculpatory provision. In regard to certain non-speculative third party risk liabilities, Hold-Harmless clauses serve to indemnify one or more of the contracting parties from a liability they might otherwise be exposed to. Instead of transferring a risk to a third party professional risk taker such as an insurance agency, such clauses transfer the risk entirely to one of the other parties to the contract. Indemnification clauses can take one of several forms. Limited Indemnification protects the owner against liability from the negligent actions solely of the contractor. Intermediate Indemnification protects the owner from liability due to negligent actions where the parties may be jointly liable. Broad Indemnification clauses are constructed to protect the owner from liability, even if the owner is solely at fault. Since tort liability

laws generally take precedence over contract law, many courts will not enforce Broad Form Indemnification contract provisions. It is generally public policy that matters concerning a tortuous liability be resolved through due process in a court of law, and not within the confines of a contract.[10]

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10. Mason, George Edson, A Quantative Risk Management Approach to the Selection of Construction Contract Provisions (University Microfilms International: Ann Arbor, MI., 1978), pp. 44-45.

CHAPTER IV

RISK IDENTIFICATION AND TYPING

4.1 Introduction

Risk identification can be the most critical step in risk management. If a risk is not identified, how can steps be taken to treat it? Understanding the origins of risk is essential to successfully undertaking the process of managing it. "a risk which is overlooked cannot be considered and treated in a rational manner. The unrecognized risk is retained by the firm whether or not this would have been the preferred method of treatment had an analysis been made."[11]

4.2 Sources of Risk

Construction risks arise from a variety of sources. Areas associated with the greatest risks include: (1) changed or differing site conditions; (2) escalation on long term projects; (3) construction delays; (4) contractor's cash flow situation; (5) liquidated damages; (6) retainage; (7) delivery of a quality product; (8) availability, quality and cost of labor; (9) insurance coverage; (10) subcontractor responsiveness; and (11) outside influences.[12] The

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11. Mason, p.12.

12. American Society of Civil Engineers, p. 40.

process of treating risk begins with the task of identification. Risk identification is far from an exact science. Although there are a number of empirical approaches to risk identification, such as checklists, no exact quantitative method exists. Therefore, an organization must rely on less scientific measures to identify potential risks and assess their impact. Intuitive knowledge and other intangible factors are the predominating influences used to root out risk. Industry experience, careful project preparation and planning can help reveal latent risks. Although such devices as checklists can be of some benefit, one must be cautious of relying solely on them or using them merely out of routine or habit. These measures can help to identify the following kinds of risks: (1) Construction Risk; (2) Physical Risk; (3) Contractual and Legal Risks; (4) Performance Risk; (5) Economic Risk; and (6) Political and Public Risks.[13] In a sense, the checklists themselves can become just a another checklist item if treated too mundanely.

4.3 Categorizing Risk

Once the step of identifying risk has been accomplished, the task of classifying risks according to some rational scheme can proceed. Construction risk can take on a myriad of forms and be categorized in many different ways,

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13. Roozbeh Kangari, "Expert Systems For Risk Analysis", Civil Engineer, 57:79, June 1987.

depending on the evaluation criteria chosen. Categories of construction risks include: (1) inherent and artificial; (2) controllable and uncontrollable; and (3) speculative and nonspeculative. Each risk can be assessed and placed into one or more of these categories. Thus, salient characteristics of each risk can be used to determine the best approach to manage it.

4.4 Contractually Shared Risks

Contractually shared risks include: "... non-performance, situation change, third party liability and the risk of damage to the project".[14] Examples of non-performance risks include: failure of the low bidder to enter into the construction contract, non-payment of creditors, failure to complete the project according to the plans specifications and failure to complete the project on time.

4.5 Inherent Risks

Inherent risks are a product of the unpredictable nature of the construction industry. Whereas, artificial risks come about largely from the actions and relationships between project participants. Controllable, inherent risks should be assigned to the party best able to exercise control over them. However, most inherent risks are not within

14. Mason, p. 26.

much control of any of the parties. Inherent risks are common in the following areas: (1) engineering; (2) codes & regulations; (3) construction; (4) project schedule; (5) site conditions; (6) labor; (7) operations; (8) casualties; and (9) financing.[15]

4.5.1 Engineering

In the design of a construction project, the engineer is held only to a reasonable standard of care, not an absolute one. "...the Engineer is responsible for exercising the skill and diligence that is normally rendered by a reputable professional engineering firm under the circumstances."[16] The engineer will make every effort to limit his or her obligation to only correcting any design deficiencies which may be discovered and avoid assuming responsibility for any consequential damage that may arise from the error. Despite the absence of any guarantee on an engineer's work, the engineer still maintains a great deal of professional liability. In fact, despite the engineer's relatively small financial share of a project, his liability can be virtually unlimited. Consequently, "...this exposure is reflected in the high premiums for professional-malpractice insurance, and it is included in the rates charged for

15. Madenburg, p. 75.

16. Madenburg, p. 75.

engineering services."[17] Since ideally such professional services are not contracted purely on the basis of cost, the owner will ultimately pay proportionally for the amount of risk the architect-engineer firm is expected to assume. Therefore, in the interest of overall project efficiency and the mutual protection of the project participants, some plan of mutual indemnification should be considered.

4.5.2 Codes and Regulations

Historically, the obligation of adhering to applicable codes and regulations belongs to the engineer, because such guidance is best incorporated into the contract documents at the time of their formation. However, permits, licenses, etc. may be shared among the owner and contractor on a case by case basis, depending on which party is in a better position to oversee the process.

4.5.3 Methods of Construction

The responsibility for risks involving methods of construction rests largely with the contractor. This is particularly true under a firm-fixed price contract, where performance type specifications are likely to be encountered and decisions on methods of construction are left to the contractor. In this area, it is essential for the owner to

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17. Madenburg, p. 76.

carefully distinguish between those risks a contractor can and cannot control.

4.5.4 Project Schedule

A contract should specify a realistic time for completion of the work. The engineer should confer with the owner to establish a reasonable time for contract completion which recognizes not only the owner's need for the completed product, but also a contractor's ability to complete the work in the most cost effective manner. Specifying an unduly short contract time for completion could not only deter some contractors from bidding and limit competition, but also force those that do bid into adding contingencies for such liabilities as accelerated work and liquidated damages. If a reasonable project schedule is established by the contract, the risk of diligently pursuing the contract work rests almost entirely with the contractor. However, it is generally accepted that the risk of unforeseeable delays beyond the contractor's control should remain with the owner.

4.5.5 Differing Site Conditions

The risk of encountering differing physical conditions at the job site is probably the most contentious area of risk sharing. A more comprehensive discussion of differing site conditions is found in Chapter VIII.

4.5.6 Labor

The contractor exercises control to some extent over most labor related matters, and consequently, bears most of this risk. "while none of the parties to the construction process can control national economic trends, if the system of collective bargaining in which contractors or their associations bargain for wages and working conditions directly with labor unions is to be effective, the contractor must under his construction contract bear a substantial part, if not all, of the cost associated with the escalation of labor costs."[18] However, some labor problems can be extremely disruptive to the satisfactory progress of a construction project. Strikes and work stoppages arising from trade jurisdiction disputes and the failure of collective bargaining negotiations usually are well beyond the control of any individual contractor. In such instances, the owner might want to consider assuming at least some of the risk for delays to the contractor's operations.

4.5.7 Operational Risk

Will a facility perform according to it's intended purpose? If not, whose responsibility is it? Such questions are the essence of operational risk. A contract

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18. American Society of Civil Engineers, p. 63.

reaches certain contractual milestones which discharge most, but not all, of the direct construction risks. But a contractor's liability for what is known in the industry as latent defects may be carried for many years after a project is completed. Or perhaps a major design deficiency comes to light only after a facility is placed in operation. Barring such occurrences however, the owner inescapably retains the risk of whether the completed facility will live up to its operational expectation. This is particularly true whenever state-of-the-art technology is involved. "...for a state-of-the-art facility, performance is the most pertinent concern. The facility may fail to perform as specified despite proper design or workmanship, because the process itself is not viable or cannot be scaled up as anticipated. This is the entrepreneurial risk that is usually assumed by the owner of the technology."[19]

4.5.8 Casualties

Physical calamities can sometimes beset a construction project. Uncontrollable events such as natural disasters are deemed uncontrollable risks and are usually insurable due to their non-speculative nature. Although there are many different schemes of assigning insurance responsibilities among the parties, the burden of coordinating the

19. Madenburg, p. 78.

respective coverage rests with the owner.

4.5.9 Financing

The risk of project financing is shared to a certain extent among the parties. Certainly, the owner must have the resources available to undertake the project, and the contractor the financial wherewithal to complete the construction. Naturally, both the owner and contractor must be concerned with each other's solvency. Despite the backing of a surety, a defaulting contractor can leave the owner in quite a financial lurch. Conversely, the contractor must have some reasonable assurance he or she will be promptly paid by the owner. Specific payment terms are typically spelled out in the General Provisions of the contract. These usually include some form of progress payments intended to improve the contractor's cash flow situation. Although the owner has no obligation to include such provisions in a contract, it is generally in his or her interest to do so. If a contractor is denied progress payments for satisfactory work-in-place, the cost of financing the entire project himself will be added to the bid price for the project. Therefore, risk sharing in project financing is to the mutual benefit of both the owner and the contractor.

4.6 Artificial Risk

Artificial risk is created subsequent to the inception

of a project and is, in a sense, 'man made'. To a great extent such risks are avoidable and completely unnecessary and can be detrimental to the working relationship between the owner and contractor. Artificial risks result from such problems as vague contract language, poor communications between the parties, failure to fulfill contractual obligations, and inept contract administration.

4.6.1 Vague Contract Language

The difference between the owner's expectation of a final product and what the contractor furnishes in compliance with the contract can vary substantially. Vague contract language inevitably leads to these kinds of misunderstandings. Under contract law, the rules governing contract interpretation dictate that ambiguous provisions be construed against the drafter. Because the architect-engineer is not in privity with the contractor but an agent acting on the owner's behalf, the owner retains this risk. Owners and architect-engineers must be aware that a contractor's reasonable interpretation of a vague provision will stand as long as that interpretation is consistent with industry custom. The risk of offering a clear and concise contract for bidding remains with the owner.

4.6.2 Poor Communications

Inept contract administration can quickly turn a well

run project sour. Poor communications are usually a symptom of bad contract management and can lead to a misinterpretation of the other parties' intentions. Left unchecked, an irreversible deterioration in mutual cooperation will inevitably result. Moreover, untimely or incompetently drafted correspondence between the parties can inadvertently lead to the accruing of unnecessary costs. This kind of situation has a tendency to feed upon itself and heighten suspicions over the other party's motives. Eventually, communications can break down entirely and escalate into a 'paper war' where correspondence becomes a self-serving tool in preparation of a claim or counterclaim. Sloppy project management procedures or sheer inexperience can jeopardize any spirit of cooperation between the parties.

4.6.3 Failure to Fulfill Contractual Requirements

One of the greatest risks in construction contracting is the failure of another party to fulfill their contractual requirements. Sometimes the party is either unable or unwilling to meet their obligations. Contracts usually outline remedies in the event of a breach of contract or default by any of the parties in privity.

4.7 Uncontrollable Risks

A distinction must be made between controllable and uncontrollable risks. A controllable risk implies that one

party has at least some ability to mitigate or manage it. This does not necessarily mean the party can completely control such a risk. An uncontrollable risk is that which the responsible party has no means of controlling. Uncontrollable, inherent risks should not be transferred. The misallocation of these types of risks are frequently the source of bitter controversy and dispute. The inappropriate allocation of uncontrollable risks is likely to foster an adversarial relationship among the contracting parties. Such an atmosphere only serves to make the situation ripe for claims and legal action. At best, litigation is a break even proposition, even for the prevailing party. Usually both the plaintiff and the defendant incur unrecoverable costs during the proceedings regardless of the outcome. In such a contentious environment, only the lawyers win.

4.8 Speculative Risks

Risks can also be considered either speculative or nonspeculative in character. Speculative risks are those which yield some benefit to one of the parties should the event occur. Conversely, nonspeculative risks are those which, in theory, benefit none of parties should the event occur. "nonspeculative risks are those that threaten loss and offer no potential for gain."[20] One of the first steps

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20. Madenburg, p. 79.

in properly assigning and managing risks is to distinguish between speculative and non-speculative risks which could potentially occur during the life of the project. Only risks which are nonspeculative are insurable.

CHAPTER V

RISK SHARING AND TREATMENT

5.1 Assigning Risks

Once risks are identified, each one must be clearly assigned to the respective parties to the contract. To do so, each party's role in the project must be clearly defined. Only then can the individual risks be properly allocated. It is essential that "any exposure to risk must be commensurate with the benefits to be derived from participation in the project, [and] the participant who can best control the outcome of an event or task be assigned responsibility for any associated risks."[21]

5.2 Principles of Risk Allocation

A number of guidelines have been developed to aid owner's in making risk allocation decisions. The principles of risk sharing are intended to be objective 'rules of thumb' with the interest of maximizing the efficiency of resources placed into a construction project by all of the participants. The dangers of shortsighted risk transfer or even inadvertent risk retention can seriously jeopardize the success of any project.

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21. Madenburg, p. 80.

5.2.1 Allocation of Unavoidable Risks

"some general principles for allocation of unavoidable risks (those that cannot be eliminated prior to contract award) are proposed":[22]

1. The contractor should bear all risks over which he can exercise reasonable control. These include all matters relating to selection of construction methods, equipment and prosecution of the work, except as this control is impaired by the action of third parties.

2. Truly unpredictable risks (natural disasters, force majeure, which are nonspectulaive in nature) are properly allocated to insurers. The owner may in some cases choose to be a self-insurer.

3. Site conditions should be defined as a basis for contracting. The contractor should bear the risk of variations that might reasonably be anticipated, but the owner should bear the costs of substantial differences. "Reasonably" and "substantial" are necessarily contentious terms, but the area is too complex to admit black-and-white definitions. Some general clauses, such as the federal "differing site conditions" clause, have now been through the courts enough so that there is fair legal agreement on what the words mean.

4. In the area of third party effects, risks should be allocated to those best able to deal with the third party. This principle would assign to the owner the risks related to government agency regulations and to agreements with adjacent property owners. Risks associated with labor and subcontractor agreements and disputes should be assigned to the contractor.

5. Construction safety should be the responsibility of the contractor, although financial risk with respect to third parties is properly allocable to insurers (either the contractor's or the owner's).

6. The allocation of risks due to general economic factors (material and labor price escalation, foreign

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22. American Society of Civil Engineers, pp. 59-60.

exchange rates, general strikes) depends on the duration and location of the work. For domestic projects expected to take less than two years to complete, it may be reasonable to ask bidders to price these risks. For overseas or inaccessible locations, and for those with long completion schedules, the owner may properly assume part of these risks through "rise and fall of costs" clauses and other relief provisions.

5.2.2 Additional Guidelines

Some additional guidelines for risk sharing include:[23]

1. If a risk is imposed upon a party, an opportunity for reward to the party should exist for properly dealing with the risk.

2. A risk should be allocated to the party which is in the best position to control it.

3. A risk should be allocated to the party in whose hands the efficiency of the system is best promoted.

4. A risk should be allocated to the party which is best able to undertake it financially.

5. Steps should be taken to assure that risks are actually allocated as intended.

5.2.3 Owner's Risk Strategy

The owner also should consider the following when forming a risk sharing strategy for his or her firm:[24]

(1) Allocate sufficient risk to participants to motivate them to perform properly.

(2) Consider the degree of control over the risk to be allocated when assigning risk responsibility.

(3) Consider the participants' abilities to control risks allocated to them.

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23. American Society of Civil Engineers, p. 67.

24. Madenburg, pp. 80-81.

(4) Retain risks of a national or international character, such as a foreign currency devaluation or trade sanctions.

(5) Share mutually dependent risks on a preselected, rational basis, rather than overlapping them. This action will prevent conflict and inadvertent assumptions of loss because of inability to determine fault.

5.3 Risk Treatment Measures

The final step in managing risk is implementing a strategy which minimizes the total risk to all the participants in a construction project. Risk can be treated effectively through several means, depending on its nature and characteristics. Obviously, not all risks can be eliminated. In fact, little can be done to diminish some. There are a variety of tactics that can be used to mitigate the overall risk associated with a construction project.

Once the risks have been identified, measures must be employed to manage them. Four methods of risk treatment include: (1) Avoidance, (2) Abatement, (3) Retention, and (4) Transfer.[25] The measures for allocating risk have three objectives: the allocation of unavoidable risks, the elimination of unnecessary risks and the restoration of risks that have become fixed costs.[26]

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25. Mason, p.26.

26. American Society of Civil Engineers, p. 52.

5.3.1 Risk Avoidance

Avoiding an unnecessary risk is a useful tool in limiting one's exposure to an undesirable uncertainty. This tactic, however, is somewhat of an all-or-nothing proposition. A common example of risk avoidance involves a contractor who sees too much risk in undertaking a given construction project. By simply refusing to submit a bid, he or she can avoid the risks associated with the project altogether. Unfortunately, all the opportunity is also lost along with the risk. Risk avoidance has its obvious limitations. A contractor who avoids every contract put out for bid will not remain in business long. Moreover, most risks cannot just simply be avoided and must be dealt with by other means.

5.3.2 Risk Abatement

Risk abatement is a strategy aimed at mitigating risks, since most can seldom be eliminated entirely. Mitigation should be performed on a cost effective basis. That is, the abatement costs should not exceed the value of the amount the risk diminished. An example of a risk abatement strategy is the establishment of a loss prevention program within an organization. Again many risks cannot be diminished economically, if at all. Therefore, efforts to lessen exposure to a risk occurrence must be carefully considered.

5.3.3 Risk Retention

The benefit to retaining some risks is that the prospect for potential reward may be generous relative to the liability. Judicious assumption of certain risks can lead to substantial costs savings to an owner or a handsome profit to a contractor. Risk retention is the best way to manage speculative, controllable risks and should be considered under one or more of the following conditions:[27]

(1) It is impossible to prevent or transfer the risk, and avoidance of the risk is undesirable.

(2) The maximum possible loss, or conversely stated maximum probable loss, is so small that the firm can safely absorb it within one year and remain a going concern.

(3) The chance of loss is so low that it can be ignored or so high that to transfer it would cost almost as much as the worst loss that could occur.

(4) The firm controls so many independent, fairly homogeneous exposure units that it can predict closely what its loss experience will be.

5.3.4 Risk Transfer

Although the transfer of risk is a popular method of risk treatment, it is a practice that is too often misused. Transferring risk does not eliminate it, but merely shifts it from one party to another. This practice is fraught with pitfalls. Not only are some risks not transferable, but

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27. Mason, pp.28-29.

those that are must be selected carefully. Risk transfer can occur in two ways, through contractual means or insurance-like practices. Hold-harmless clauses and other contract provisions constitute the first, insurance and bonding the second.

5.4 Risk Management Techniques

Once assigned, the next step is to properly manage and mitigate the risks. Some risk management techniques include:[28]

(1) Obtaining firm price quotations from vendors and contractors for all major engineered systems.

(2) Perform sufficient preliminary engineering during project development to clearly define scope and identify inherent risks.

(3) Assign risks prudently by means of appropriate contractual format.

(4) Dedicate specific contingency budgets and reserve margins to each risk area.

(5) Use outside consultants to evaluate risk, identify potential cost impacts and develop contingency plans.

(6) Investigate the reputation and financial stability of all project participants.

(7) Conceptualize the project thoroughly so that all objectives and restraints are understood by all participants.

(8) Make certain that no risk, unless purposely shared, is included in more than one participant's scope of responsibility.

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28. Madenburg, p. 81.

(9) Reevaluate potential risk situations as the project progresses.

Appendix A contains a matrix which examines commonly identified construction contracting risks and the strategies available to treat them.

CHAPTER VI

INSURANCE, BONDING AND THIRD PARTY RISK

6.1 Insurance Defined

The basic principle of insurance involves the transfer and pooling of risks. Insurance only shifts the potential financial consequences of a risk, and not the responsibility for the risk. It is important to remember that insurance in no way prevents the occurrence of a risk, but merely redistributes the losses. "an insurance company agrees, for monetary consideration, to assume the financial impact of a particular risk for a given period of time. The insurance company thus becomes a professional risk taker. [The difference between insurance and gambling is that a] gambler has created a risk by playing in hope of winning, [whereas] the insurance buyer has not by his action created the risk; rather, he has attempted to cover an existing risk."[29]

6.2 Self-Insurance

Consciously carrying no insurance or practicing self-insurance for a particular risk is a form of risk retention. Self-insurance means that a firm has set aside a contingency in the event the risk occurs. Whereas, no insurance means

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29. Mason, p. 34.

no contingency has been set aside. Insurance deductibles are a form of risk sharing between the insurer and the insured. The owner or contractor transfers a risk through insurance to the insurer, but retains the risk of losses covered by the deductible.

6.3 Bonding

Bonding is in sense insurance against the contractor failing to meet his or her contractual obligations. The following types of bonds are frequently used in construction contracting: bid, payment and performance. Maintenance, completion, supply and subcontractor bonds may also be encountered. Bonding differs from insurance in several ways:[30]

> (1) A surety bond has three parties to the contract: the principal, the obligee, and the insured. Two parties normally enter into an insurance contract, the insured and the insurer.
>
> (2) Under a surety bond, the principal obtains the bond and pays the premium, but the obligee receives the protection. An insured [party] usually purchases an insurance contract to protect himself.
>
> (3) A loss under a surety bond may be caused intentionally by the principal. An insurance loss should be accidental from the viewpoint of the insured.
>
> (4) Ideally, there would be no losses under a surety bond because the surety would not write the bond if there were any chance of loss and the surety would discover any potential losses in its investigation. An insurer expects some losses in an insured group.

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30. Mason, pp. 39-40.

Ideally, therefore, a surety bond premium would not have to contain any expected loss allowance. The premium would cover only the surety's investigation and other expenses and provide some margin for profit and contingencies. An insurance premium must [also] provide for expected losses. In practice, sureties do incur some losses because their investigations are not completely effective, but losses are a much smaller proportion of surety bond premiums than of insurance premiums. Surety bond loss ratios also tend to fluctuate more widely over time because of lower loss frequencies and the sensitivity of much bond experience to economic cycles and natural catastrophes.

(5) If a loss does occur, the surety can turn to the principal for reimbursement. An insurer does not have this right against the insured.

6.4 Third Party Liability Risks

Third party liability risks generally arise from either bodily injury or property damage. Exposure to liability can result from such incidents as personal injuries or physical damage to property:[31]

(1) occurring on the work premise.

(2) caused by an occurrence and rising out of operations performed for the owner by an independent contractor.

(3) arising out of (the) owner's general supervision of work of an independent contractor.

(4) resulting from the use by others of the completed project.

(5) resulting from defective or insufficient plans and specifications

(6) resulting from explosion, collapse, or underground damage.

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31. Mason, pp. 21-22.

(7) resulting from a legal liability for a fire.

(8) resulting from (a) contractor's use of automobile and transport vehicles.

6.5 Property Damage Insurance

In addition, each party must be aware of the potential risks involved with their own property. These risks include loss and or damage:[32]

(1) due to fire and related hazards.

(2) the perils included under extended coverage.

(3) to project materials and equipment in transit or storage.

(4) due to Force Majeure (Acts of God).

(5) due to theft, burglary, and fidelity hazards.

(6) due to vandalism and malicious mischief.

(7) due to business interruption.

6.6 Adjacent Property Protection

Adjacent property protection is a risk of particular concern in an urban environment. The evolution of risk allocation in this area is interesting. Owners once simply placed this responsibility on the contractor. Enough nasty disputes arose that owners began to task the engineer with including protection systems in their designs. The arena of litigation then began to focus on the engineer. The owners' blatant attempts to shift this risk to the designers failed.

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32. Mason, pp.22-23.

Thus, the practice of defensive engineering emerged. Engineers began to over design projects in order to limit their liability. The corresponding increase in design costs were passed on to the owners in the form of higher fees for their services. Once again, the owners ended up paying for the reallocation of risk.[33]

6.7 Wrap-Up Insurance

In an effort to deter the spiral of shifting responsibility, owners began to use owner furnished coordinated insurance, also called "wrap-up" insurance. This insurance was intended to protect the owner, engineer and contractor from third party claims. In essence, the owner indemnified the contractor and architect-engineer from third party liability claims. Since such coverage provided little incentive for the contractor to limit damages to a third party, owners actually encouraged the engineers to over design projects. Eventually, this game of 'one-up-manship' in effect substituted the adjacent property damage risk with the certainty of unreasonable protective construction costs.[34]

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33. American Society of Civil Engineers, p. 56.

34. American Society of Civil Engineers, p. 56.

6.8 Mechanics Lien Laws

A number of states, including Florida, have enacted Mechanics Lien Laws. Such laws have no basis in either common or equity law and are purely a product of legislative action. Their purpose is to protect the interest of specific third parties not in privity to the construction contract. Mechanics Lien Laws hold the owner responsible, under specific circumstances, for a prime contractor's debt to a subcontractor or supplier. Under these laws, it is possible for an owner to pay twice for the same work, first to the prime contractor under a customary progress payment and a second time if the prime contractor fails to pay the subcontractor for his work. In such an event, the owner still retains the right to seek remedy from the prime contractor. But regaining payment from a financially strapped contractor can be difficult. Under such laws, the courts will not recognize any contract provisions which attempt to shed this responsibility. The owner, however, can take several measures which prevent or mitigate double payment. These include doing business with a reputable and financially stable contractor, holding payment retainage, requiring a payment bond, and mandating some form of creditor payment certification.

CHAPTER VII

CONSTRUCTION RISK MANAGEMENT SYSTEM

7.1 Probability Theory

The principles of probability theory can be applied to risk analysis to provide quantitative solutions on which to base risk sharing decisions. This probabilistic decision making procedure provides a structured approach to dealing with uncertainties in a construction project. The Cardinal Utility theory provides a measure of a decision maker's willingness to take on a particular risk. Together they form the Expect Value of Utility which can be used quantitatively to select different risk sharing alternatives.

7.2 Construction Risk Management System

An article by Jamil F. Al-Bahar and Keith C. Crandall presents one model which uses a detailed and comprehensive systematic probabilistic approach toward managing construction risks. The method is called, Construction Risk Management System (CRMS).[35] The objective of the process is provide an owner with a kind of early warning system to potential construction problems and avoid costly claims and

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35. Jamal F. Al-Bahar and Keith C. Crandall, "Systematic Risk Management Approach for Construction Projects", Journal of Construction Engineering and Management, (116:533-546), September, 1990.

litigation. The Construction Risk Management System (CRMS) consists of the following processes: risk identification, risk analysis and evaluation, response management, and system administration.

7.3 Risk and Uncertainty

Risk is the product of a risk event, the uncertainty of the event, and potential loss or gain. Uncertainty represents, "... the probability that an event occurs; thus a certain event has no uncertainty".[36] These risk components are defined as follows:[37]

(1) Risk Event - What might happen to the detriment or in favor of the project.

(2) The Uncertainty of the Event - How likely the event is to occur.

(3) Potential Loss or Gain - It is necessary that there be some amount of loss or gain involved in the occurring of the event, i.e., a consequence of the event happening. We will use "loss" as a general term to include personal injury and physical damage, and "gain" to include profit and benefit.

7.4 Risk Identification

Risk identification is "... the process of systematically and continuously identifying, categorizing and assessing the initial significance of risks associated with a

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36. Al-Bahar (116:534).

37. Al-Bahar (116:534).

construction project. [There are six steps to the risk identification process]:[38]

> (1) determining the existence of uncertainty.
>
> (2) developing a preliminary checklist of potential project risks. Any risks that affect productivity, performance, quality and economy of construction should be included. A failure to recognize the existence of one or more potential risks may result in a disaster or foregoing an opportunity for gain had proper action been taken. Success is still heavily dependent upon the experience combined with intuition of the contractor identifying the risk.
>
> (3) identifying risk event and consequence scenarios that represent all reasonable possibilities arising from the occurrence of each primary source of risk included in the preliminary checklist. Consequences can include economic gain or loss, personal injury, physical damage, time and cost savings or overrun. The financial consequences [are] to be used as the criterion for assessment of the risk.
>
> (4) risk mapping depicting the probability of occurrence versus the potential severity of the risk. Iso-risk curves represent equivalent risk, but differences in uncertainty of gain or loss.
>
> (5) classifying risk according to some logical, formal classification system.
>
> (6) employing a risk category summary sheet as an overview of risks that may be interrelated. Conditional risk variables provide insight into the interaction of one event with other listed events.

These steps are intended to expand the contractor's awareness about the risk involved and adopt strategies to mitigate risks according to their nature. They are by no means intended to be all inclusive, but merely a basis for de-

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38. Al-Bahar (116:535-6).

veloping a risk management strategy.

7.5 Risk Analysis and Evaluation

The purpose of the risk analysis is, "... to determine [risk] significance quantitatively through probabilistic analysis. [This is] a process which incorporates uncertainty in a quantitative manner, using probabilistic theory, to evaluate the potential impact of risk."[39]

The procedure is comprised of the following steps:

> (1) data collection - objective historical [data] is best if available, subjective recollection if not.
>
> (2) modeling uncertainty - defined as, explicit qualification of likelihood of occurrence and potential consequences based on all available information about the risk under consideration. With the likelihood of occurrence presented in terms of probability, and potential consequences in financial monetary terms. An assessment of the potential consequences and an assessment of the probability distribution.
>
> (3) evaluation of potential impact of risk - Uses the expected value theory to evaluate the overall impact of risks by combining the uncertainty of an event with the potential consequences. The sum of financial risk for all events will provide the global evaluation of risk for the project.

7.6 Response Management

Response management constitutes the risk management phase of the CRMS. The objective is for the contractor to, "... formulate suitable risk treatment strategies [to] (1) remove as much as possible the potential impact; and (2)

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39. Al-Bahar (116:539).

increase control of risk."[40] There are two approaches to managing risk. The first is risk control, which employs measures "... aimed at avoiding or reducing the probability and/or potential severity of losses occurring, [and, the second is risk finance which involves] making provisions to finance the losses that do occur."[41]
Accordingly, response management consists of two steps: (1) development of alternative risk management strategies; and (2) assigning alternative strategies to project risks.

Alternative risk management strategies include: risk avoidance, loss reduction and risk prevention, risk retention, and risk transfer. Risk avoidance is based on the premise that, by avoiding the exposure to risk, the contractor will not experience the potential losses that the risk exposure might entail. On the other hand, the contractor also forgoes the potential gains that may have been derived from assuming the risk. Loss reduction and risk prevention programs are intended to decrease the contractor's exposure to risk by reducing the probability of the risk and the financial severity of risk should it occur. Risk retention is done it two ways: planned and unplanned. Planned risk retention is "... a conscious and deliberate assumption of

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40. Al-Bahar (116:540).

41. Al-Bahar (116:540).

recognized or identified risks by the contractor, [whereas, unplanned retention occurs when the] contractor does not recognize or identify the existence of a risk and unwittingly assumes the loss that could occur."[42]

Risk transfer can be accomplished by either contractual or insurance-like methods.

7.7 System Administration

CRMS administration requires that a corporate risk management policy be formulated which establishes policies, procedures, goals and responsibilities for risk management. "A risk management policy is a formal plan, procedure or document that outlines the rules within which the risk manager may operate [and] provides guidelines for consistent actions in managing the risks."[43]

A system for the review and management of CRMS model functions must be put in place. Records must be maintained so that statistic data is available with which the best course of action can be selected to treat a specific risk. The recorded data should include risk frequency, severity, consequences and other related information.

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42. Al-Bahar (116:540).

43. Al-Bahar (116:543).

CHAPTER VIII

RISK ALLOCATION THROUGH CONTRACT CLAUSES

8.1 Risk Transfer Through Contract Provisions

Certain contract clauses found in the General Conditions section of a construction contract affect the assignment of certain risks among the contracting parties. Although each provision contained within the General Conditions allocate risk in some way, several clauses in particular deal with potentially great risks which are very often subject to dispute and controversy. Some examples of these clauses include: differing site conditions, subsurface data disclaimers, changes and no damages for delay clauses. This chapter will examine in detail the typical Differing Site Conditions, No Damage for Delay, and Liquidated Damages provisions and their respective implications on risk assignment.

8.2 Differing Site Conditions

Rare is the contract which accurately and completely depicts to the contractor the conditions a contract can expect at the job site throughout the entire course of the project. The risk of encountering unknown physical conditions at the construction site can be mitigated through an extensive geological site investigation. It is in the

owner's interest to invest in the up front cost of tasking the engineer to conduct a comprehensive surface and underground survey, and include as much information as possible in the contract documents. This action taken in conjunction with a Differing Site Conditions clause, minimizes the contractor's exposure to risk and should result in less of a bid contingency. Any contract language disavowing the site data should be avoided. The risk of encountering differing site conditions "...is uncontrollable, and thus is best assumed by the project owners as a part of the speculative risks of the venture."[44]

Situational changes may develop in a project over time. The site conditions a contractor encounters may deviate from the contract documents or the owner's requirements for the project may change. Obviously, the risk of these occurrences can have a substantial financial impact on either the owner, contractor or both. Some might argue that a differing site conditions clause unduly benefits the contractor because it is unlikely the owner can ever "... negotiate a [deductive] contract price change based on the contention that the site conditions made the work less expensive than contemplated by either party. The contractor need only state that he did anticipate the ease with which the work is being

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44. Madenburg, p. 78.

accomplished, and [in fact] reflected this in his bid."[45]

Encountering unknown physical conditions is one of the most contentious problems of construction contracting. It is in this area that many owner's too often attempt to allocate the entire risk to the contractor through exculpatory contract clauses. This produced, "... the extraordinary spectacle of large works being built on the faith of investigations which have not been made (those which every tenderer is said by the contract to be bound to carry out) and without reliance on the site investigations that actually have been made."[46] Although the inclusion of differing site conditions clauses in a contract substantially places the majority of this risk with the owner, contractors are wary that the absence of specific geologic data can still lead to disastrous misunderstandings. Therefore, it is essential that owners go the extra mile with their engineers to ensure a comprehensive site investigation is done and make <u>all</u> the data available to prospective bidders. Despite traditional misgivings to do the contrary, there truly is no benefit to the owner by keeping vital site survey information from a contractor. "owners still do not recognize that skimping on [site investigations] creates an unnecessary

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45. Mason, p. 20.

46. American Society of Civil Engineers, p. 52.

risk - that bidders will spook and raise their contingencies by many times the illusionary saving in additional site investigation costs."[47]

Following this reasoning, it is illogical for an owner to place the responsibility of a geologic site investigation on a contractor. In a competitive bidding environment, few contractors would be willing to incur the expense of a thorough site investigation without a firm prospect of winning the contract. One can assume the owner has the resources and time to see that such an investigation is done. Such an investigation is well within the owner's control and certainly in his or her interest.

An owner may retain the financial liability for unexpected events encountered by the contractor at the job site through a differing site conditions clause. Although most contracts hold a contractor accountable for conditions a reasonable pre-bid site investigation would reveal, Differing Site Conditions clauses provide relief for any impact from conditions not readily apparent. The clauses typically recognize two types of differing site conditions, called type I and II. Type I refers to "... subsurface or latent physical conditions at the site differing materially from

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47. American Society of Civil Engineers, pp. 52-53.

those indicated in [the contract documents. Type II are] unknown physical conditions at the site of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in [the] agreement."[48] Such clauses go on to say in effect that the owner will make an equitable adjustment to the contract price and time for additional work performed as a result of the changed conditions.

8.3 No Damage for Delay Clauses

No damage for delay clauses are intended to protect the owner against the risk of claims for delay incurred by the contractor, regardless of fault by the owner. No damage for delay clauses operate contrary to that of a suspension of work clause, where a contractor is entitled to compensation for damages resulting from unreasonable delays caused by the owner. The degree of enforceability of no damage for delay clauses vary among different jurisdictions. Before proceeding with a damage for delay claim against an owner, a contractor should consider the following: (1) the existence of a no damage for delay clause in the contract; (2) governing jurisdictional laws and case law precedent; (3) the jurisdiction's exceptions to such clauses; and (4) other contract clauses that may provide a remedy for recovery.[49]

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48. Kozek, pp. 21-22.

8.3.1 Enforceability of No Damage for Delay Clauses

The courts do not favor the enforcement of exculpatory contract provisions, such as no damage for delay clauses. Broad applications of such wording are deemed to place an unfair burden of risk upon the non-drafting party to a contract, i.e., the contractor. Although it has been widely accepted that no damage for delay clauses do not violate public policy, they are interpreted strictly by the courts so that their application will have the narrowest possible scope. This action is consistent with the traditional role of the courts, which is not to rewrite a contract, but enforce what already exists. Judges will endeavor to interpret, through construction, the intent of the parties at the time the contract was formed, and also, whether any delays were foreseeable and or contemplated by the parties.

Rarely do No-damage-for-Delay clauses provide "blanket protection" to the owner. Exceptions vary greatly among different jurisdictions. The facts pertaining to each individual case is the most important factor. If the wording of the clause is too general, it is unlikely to be enforced. Consequently, a specific clause which is intended

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...Continued...

49. Michael S. Simon, Construction Contracts and Claims (New York: McGraw-Hill Book Company, 1979) pp. 74-76.

to cover a mutually contemplated unusual circumstance will probably be upheld by the courts. Some exceptions recognized by the courts include contractual abandonment, misrepresentation, bad faith or tortuous actions by the owner.[50]

8.3.2 Case Law Precedent

Although there are a number of significant legal cases pertaining to no damage for delay contract clauses, the following two cases illustrate examples of the success and failure of such clauses in court. In the case of [Peckham Road Co. v. State of New York, 300 N.Y.S.2d 174 (1969) affirmed 321 N.Y.S.2d 117 (1971)], a no damage for delay clause was upheld by the New York State Supreme Court, Appellate Division. The case involved a contractor who was delayed in the construction of a highway project because the State failed to gain the right-of-way to the site prior to construction. The contract contained language that warned such an occurrence was possible, since the State had not yet gained possession of the property. The court deemed the no damage for delay clause to be operative because the delays, "...were within the contemplation of the parties at the time the contract was entered into and the delay was not brought about by the active interference of the state."[51]

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50. Simon, pp. 74-76.

51. Simon, pp. 93-94.

In a similar case, however, a New Jersey Court ruled against an owner despite the existence of a no damage for delay clause. In the case of [Franklin Contracting Co. v. State of New Jersey, 365 A. 2d 952 (1976)], certain actions by the state served to nullify the clause. The circumstances were similar to those in the case previously mentioned, with the exception that a representative of the state verbally assured the contractor the easement would be obtained in time to begin construction. The state tried to deny compensation to the contractor on the basis of an existing no damage for delay clause in the contract. The court ruled that such a clause must be, "...clear and unambiguous and must effectuate the contemplation of the parties involved. [The court added,] ... if at the outset the state had informed the contractor that all right-of-ways had not been obtained, the clause would be operative in foreclosing the contractor from making any claim for delay. It can hardly be claimed that this clause was intended to render the state immune from liability or that the parties contemplated delay because the state did not have a valid right-of-way."[52]

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52. Simon, pp. 167-168.

8.4 Liquidated Damages

Untimely project completion is always a concern to an owner. Although construction contracts usually specify some exact time for completion, there is no guarantee a contractor will finish on time. There are a variety of circumstances which can arise that prevent a contractor from doing so. The owner has several remedies available to help mitigate the financial impact of a contractor's late performance. These include retainage, liquidated damages provisions and default clauses. Owners can substantially mitigate the risk of untimely project completion instead of trying to transfer it to the contractor. Owners must endeavor to establish realistic contract time for completion so that contractors may develop practical construction schedules devoid of arbitrary and artificial deadlines.

Liquidated damages provisions serve to simply quantify in monetary terms the degree of risk a contractor must bear for late performance. As such, they are but one form of an alternative disputes resolution method. "liquidated damages are liquidated in the sense that they are known, predetermined damages, assessed for each day a contractor is late in completing contract work."[53] Liquidated damages clauses

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53. Richard C. Vaughn, Legal Aspects of Engineering (Dubuque, Iowa: Kendall/Hunt Publishing Company, 1962), p. 127.

establish a specific monetary sum to be assessed at a prescribed rate, in lieu of actual damages, in the event the contractor fails to complete the contract work within the prescribed time. Potentially costly litigation in this area may be avoided since the determination of actual damages to an owner are difficult to objectively assess.

8.4.1 Public Policy on Liquidated Damages

Liquidated damages are the subject of numerous legal debates on public policy versus the individual's freedom to contract. One argument says that damages may only be awarded through the judicial system because one party to a contract could unjustly exact penalties from another. Conversely, it can also be said that prohibiting liquidated damages clauses unduly limits the right to privacy of the parties entering into a contract. "The pendulum of judicial opinion shifts between two extremes, one holding that the public interest requires frequent refusal to enforce agreements, and the other that freedom of contract is the paramount public policy. However, no judge advocates the enforcement of all agreements and the total abandonment of the public policy test."[54]

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54. Arthur Linton Corbin, Corbin on Contracts (St. Paul, MN: West Publishing, Co., 1964), p. 335.

8.4.2 Untimely Completion as a Breach of Contract

In absolute terms, an unexcusable delay in completing a contract within the specified time constitutes a breach of contract. Contract law does not provide for punitive or exemplary damages, however morally objectionable a breach of contract may be. This holds true even if the breach is shown to be intentional. The courts assume that the parties enter into a construction contract voluntarily, each possesses some competent level of professional knowledge of the industry. Breaches of a contract are deemed to be a reasonably foreseeable consequence of doing business. Consequently, the parties are not viewed as being blindly innocent and are treated as if they entered into the contract fully aware of the potential pitfalls. However, if an injury in itself separately constitutes a liability tort, punitive damages resulting from the tort may be recoverable. "although damages in excess of compensation for loss are in some instances permitted in tort actions by way of punishment for wrong, usually provided by statute, in contract actions the damages recoverable are limited to compensation for pecuniary loss sustained by the breach."[55] Since punitive damages are usually not allowed under contract law, one restriction on liquidated damages is that they cannot be imposed as a

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55. Laurence P. Simpson, Handbook of the Law of Contracts, (St. Paul, Minnesota: West Publishing Co.,1965), p. 394.

penalty. "It is the prerogative of the court, and not of the private citizen, to assess penalties."[56]

8.4.3 Unjust Enrichment

Despite the written terms of a contract, a party may be entitled to relief of strict enforcement under certain circumstances. Such is the case when enforcement would place an unconscionable burden on the contractor and result in unjust enrichment of the owner. Therefore, liquidated damages are considered unreasonable if they effectively result in unearned windfall to the owner. "the essence of the law's remedy for breach of contract is that he who has suffered from a breach should be duly compensated for the loss incurred by non-performance. But one man's default should not lead to another man's unjust enrichment."[57]

8.4.4 Enforceability of Liquidated Damages Provisions

Since liquidated damages are intended to serve as a liquidation of potential actual damages and not a penalty for untimely performance, their predetermination cannot be arbitrary. Liquidated damages must be reasonably proportionate to any actual damages that would potentially be incurred. "... a liquidated damages provision will be valid

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56. Vaughn, p. 107.

57. Lon L. Fuller and Melvin A. Eisenberg, Basic Contract Law, (St. Paul, MN: West Publishing Co., 1990), p. 274.

if reasonable with respect to either: (1) the harm which the parties anticipate will result from the breach at the time of contracting; or (2) the actual damages suffered by the non-defaulting party at the time of the breach."[58] Hence, the requirement that liquidated damages must be reasonable in order to be enforced by the courts. This, however, does not mean that the liquidated damages must be exactly equal to actual damages incurred as a result of late performance, merely an approximation. It is incumbent upon the owner to employ some rational basis for determining the rate to be specified in the contract. The most defensible method involves the owner estimating the foreseeable potential direct and indirect costs likely to be incurred in the event of late performance. Another accepted, but less desirable approach, is to simply establish a rate as a percentage of the total estimated contract value.

The courts, however, ultimately must decide for each specific set of circumstances what is reasonable and what is not. If liquidated damages are found to be unreasonable, the owner may pursue actual damages through customary means. "If a provision is condemned as a penalty, it is unenforceable; but the rest of the agreement stands, and the injured party is remitted to his conventional damage remedy for

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58. Fuller and Eisenberg, p. 281.

breach of that agreement." [59] If a liquidated damages clause is challenged, the owner must be able to prove that: "... (1) at the time the contract was executed, a good faith estimate was made of what potential damages might be a result of the breach which is covered by the liquidated damages provision; (2) it ascertained that the potential damage was hard, incapable and very difficult of accurate estimate; and (3) it took that unascertainable amount and inserted it into the liquidated damages provision."[60]

The aggregate amount, rather than the rate, of liquidated damages can itself also become an issue. A rate which is reasonable in the short term can become unreasonable with respect to the accumulated value over a lengthy period of time. Regardless of the daily rate, common sense dictates that it would be unreasonable for liquidated damages to exceed the total value of a contract. At some point other issues must be considered, such as the owner's obligation to terminate the contract for default. Eventually, a contractor's failure to perform could be interpreted as an intent not to complete the contract. The parties' obligation to mitigate damages is mutual. Certainly, the surety of a

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59. Charles L. Knapp and Nathan M. Crystal, Problems in Contract Law (Boston, MA: Little, Brown and Company, 1987), p. 967.

60. Simon, p. 196.

bonded contractor has an interest in the amount of outstanding liquidated damages in the event the surety is called upon to complete the work. One rule of thumb sometimes used assumes liquidated damages are unreasonable if they exceed one third of the total contract value. The reasoning behind this is the owner had ample opportunity and the obligation to suspend work and complete the contract through alternate means. This determination, however, is generally a matter for the courts to decide.

8.4.5 Termination of Damages

Substantial completion of a project is a concept crucial to understanding the theory of liquidated damages. Since construction projects often involve a number of time related costs to the owner such as financing, most contracts usually specify a certain amount of time for completion. This provision will usually include a statement to the effect that time is of the essence. Many of these time dependent costs will continue to accumulate past the established completion time, if the contractor has not yet finished a facility to the point that it can be reasonably used for its intended purpose. Therefore, if the contractor furnishes a usably completed facility to the owner on or before the prescribed contract completion time, liquidated damages may not be assessed. Moreover, in the event the facility is usably completed at some point in time after the

prescribed completion date, the accumulation of liquidated damages ceases as of that time.

8.4.6 Benefit of Liquidated Damage Clauses

"for every right, a remedy", according to one equity maxim.[61] The law provides remedies for breach of contract with both judicial and nonjudicial means. Liquidated damages provisions are not intended to deter a breach by the contractor, but to compensate the owner for damages should a breach occur. For the mutual benefit of both the owner and the contractor, it is essential that liquidated damages be reasonable in their determination. Liquidated damage clauses serve both the owner and the contractor. The owner benefits by receiving some compensation for damages incurred by the contractor's late performance. The contractor benefits by not being liable for actual damages to the owner for late performance. Since these provisions can forestall costly litigation arising from the contractor's possible untimely performance, the financial risks to both parties is diminished.

8.5 Use of Standard Specifications

Boilerplate contract specifications, such as the American Institute of Architects (AIA) Document A201, General

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61. Vaughn, p. 21.

Conditions and of the Contract for Construction, generically assign certain risks. These documents, which are contained in Appendix B, are intended to be tailored to meet the needs of each individual contracting situation. Each contract in its final form usually passes through the owner's legal counsel. Unfortunately, these 'standard' contracts are systematically offered to bidders on a take-it-or-leave-it basis without thorough review. Any adjustments to future contracts may be made based on past administrative problems and input from engineers and contractors.

CHAPTER IX

CONTRACT DELIVERY METHODS

9.1 Choosing a Delivery Method

A diverse range of delivery methods and contracting options are available to an owner in the procurement of a facility. The purpose of this diversity is to allow greater flexibility in assigning construction risks depending on the nature of the project. The owner must decide two things. What will his or her contracting relationship be with the other participants in the project? And, what type(s) of contract(s) should be used to achieve his or her risk allocation objectives? These two criteria will determine how the project should be purchased. The large number of delivery methods available covers the broad spectrum of risk sharing.

9.2 Contracting Arrangements

Contract arrangements are distinguished by the type of contractual relationship the owner has chosen to interface with the other project participants. The contractual arrangement selected will then determine what contract type options should be contemplated. Whether it is design or contraction, the owner is purchasing a professional service and by doing so, transfers a portion of the overall risk

associated with the project venture. How these risks will be apportioned will first be determined by which parties the owner has chosen to participate in the project.

Some arrangements for purchasing construction include: the traditional, the speculative builder, the owner-developer design-builder, the turn-key, and the contractor management methods. A myriad of variations is possible depending on the specific needs of a given project. Factors that should be assessed in determining which method should be employed are: the type of owner, the relative degree of owner's and contractor's input to the design, the degree of the architect-engineer's control over the design, and degree of the owner's, contractor's and architect-engineer's risk.[62]

The traditional contracting arrangement is in essence a two step process for the owner. The owner first contracts with an architect-engineer to design the project. Then, the owner contracts with a general contractor to construct the project. The traditional method may be used with either a competitive bid or a negotiated lump sum price. Speculative construction is performed when, an "... organization acts as

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62. Thomas E. Papageorge, Risk Management for Building Professionals (Kingston, MA: R. S. Means Company, Inc., 1988), p. 143.

a design-builder with the intent of selling [or leasing] the final product to an owner."[63] The owner may have the in-house resources to act as an owner-developer or design-builder, where he or she retains the design, construction and operational risks for a project. With the turn-key method, the owner purchases a completed project through a single contract with a firm that performs both design and construction services. Under the construction management method, the owner hires an agent to act on the owner's behalf in contracting design and or construction services. A summary of contracting arrangements is found in Appendix C.

9.3 Contract Types

Once a delivery method has been selected, the owner can then choose the contract type which best meets his or her risk sharing objectives. Contract types can be categorized in several different ways. Contracts may be bid competitively or negotiated. Competitively bid contracts can be based on either a firm fixed price lump sum or a firm fixed price with unit quantities. Negotiated contracts can either be firm fixed price (lump sum or unit quantity) or cost reimbursable. A summary of the basic contract types is contained in Appendix D. A tabular listing of the risks

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63. Papageorge, p. 149.

associated with each contract type is depicted in Appendix E.

9.3.1 Lump Sum Contracts

Firm fixed price lump sum contracts are by far the most prevalent type, particularly among public agencies. These contracts can either be competitively bid or negotiated and can be attractive to an owner for several reasons: (1) the cost of the project is known prior to award and beginning of construction; (2) compared to any other contract types, the maximum risk is placed on the contractor; (3) the contract price is likely to be minimized compared to the other procurement methods by promoting contractor efficiency; and (4) the owner has a fairly accurate idea of what the final product will be. Such contracts usually employ performance specifications. These provisions shift much of the risk concerning methods of construction from the owner to the contractor. The architect-engineer designs the final product without much regard to how the project will be built, since this task is left to the contractor to decide. Some disadvantages compared to the other procurement methods include: (1) the time from a project's inception to completion is lengthy; (2) contract modifications can become protracted and costly; and (3) the process does not promote quality of construction.

9.3.2 Unit Quantity Contracts

Firm fixed price unit quantity contracts offer similar advantages to the lump sum contract, except the owner retains the risk of unknown quantities. These contracts may either be bid competitively or negotiated. In return for retaining the risk of variations in quantities, the owner gains the benefit of locking in a unit price in the event specified quantities vary substantially. Unit quantity contracts are particularly useful where it is difficult to estimate actual quantities needed to complete a project. If a lump sum without unit quantities were to be used in such circumstances, the contractor is certain to place an unreasonable contingency in his or her bid.

9.3.3 Cost Reimbursable Contracts

All reimbursable contracts are negotiated and place far less risk upon the contractor than do the other contract types. Such contracts are typically used when there are too many unknown variables associated with a project to contract the work with other contract types. The premise behind all cost reimbursable contract is the contractor will be reimbursed for the costs incurred on a project. There are several variations on these 'cost plus' type contracts which govern the degree of risk sharing between the owner and the contractor. These include: (1) cost plus percentage of costs; (2) cost plus fixed fee; (3) cost plus incentive fee;

and (4) cost plus award fee contracts.

Cost plus percentage of costs contracts maximizes the owner's share of risk. Such contract schemes are prohibited in the public sector since there is very little incentive for the contractor to control costs. In fact under such an arrangement, any cost overruns actually work to the contractor's benefit. Cost plus percentage of costs contracts are used only under urgent circumstances, such as a cataclysmic natural disaster where work must start as soon as possible and before any real assessment of the work scope is fully complete.

Cost plus fixed fee contracts are similar to cost plus percentage of cost contracts, except the contractor's mark-up is prenegotiated and fixed. The contractor does have some incentive to limit costs, because his or her profit is no longer directly proportional to the amount of work completed. In fact, as costs escalate, the contractor's profit as a percentage of the total contract value actually decreases.

Cost plus percentage of costs and cost plus fixed fee contracts represent the two extremes with respect to risk sharing in cost reimbursable contracts. Cost plus incentive fee contracts serve to more equitably share the risk of cost

overruns between the owner and contractor. "in this type of contract, the owner and contractor, before award, negotiate the following item: target cost, target fee, minimum and maximum fee, and fee adjustment formula."[64] Cost plus award fee contracts are identical to cost plus fixed fee contracts, with one exception. The owner may award any portion of a preestablished award fee in recognition of the contractor's superior performance. The decision to any portion of the award the fee is solely the owner's and not subject to dispute by the contractor.

One disadvantage associated with all cost reimbursable contracts is that the owner does not know how much a project will cost until the work is completed. Cost reimbursable contracts also require meticulous accounting by the owner to ensure payments to the contractor accurately reflect the work actually completed.

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64. American Society of Civil Engineers, p. 90.

CHAPTER X

CONCLUSION

The concept of risk sharing is rapidly gaining acceptance among owners in the construction industry. Although this report is by no means all inclusive in the examination of construction risk allocation, it does show that construction risks can be managed through a systematic approach and cooperation among the contracting parties.

It is essential for an owner to fully understand and appreciate the potential impact risk can have on a construction project. An owner must develop risk sharing objectives through a logical risk allocation strategy. Otherwise, the temptation is too great to indiscriminately dump as much risk as possible onto the architect-engineer, contractor and insurers. Owners are becoming more aware that in the long run, such practices only serve to drive up the cost of doing business.

Cooperative risk sharing promotes a spirit of team work among the project participants. A thorough discussion of the respective risks pertaining to a given project is an integral part of implementing the 'Partnering' concept in construction contracting. A well planned and executed

construction project can indeed be a win-win-win situation for the owner, contractor and architect-engineer.

It is in the mutual interest of the parties that the construction process proceed as efficiently as possible. The sum of manpower, resources and money expended to bring a project into being should be minimized. The goal is proper risk allocation. Lawyers contribute no productive effort toward a final product in construction. Therefore, litigation is nothing more than a drain on limited resources in a zero sum game. Even for the party which prevails in court, litigation was at best a break even proposition. Substantial costs can be incurred due to the inevitable delays and legal fees in pursuing the claim in court. Moreover, the burgeoning court dockets involving construction contract claims only aggravates the delays and heightens adversarial relationships between the owner, contractor and the engineer.

The goal of proper risk allocation is neither to completely transfer nor completely retain all risks, but to promote overall project efficiency with respect to the aggregate use of resources.

APPENDIX A

RISK TREATMENT METHODS

Excerpted from:

(1) Madenburg, R S. and M. C. Humphrey, "Participant Cooperation Eases Project Risk Management", Power, v130, June 1986.

(2) Mason, George Edson, A Quantitative Risk Management Approach to the Selection of Construction Contract Provisions (Ann Arbor, MI: University Microfilms, Inc., 1973) pp. 48-50.

ENGINEERING AND CONSTRUCTION RELATED RISK ALLOCATION

Risk Element	Responsible Party					Mitigation Method
	Owner	Engineer	Constructor	Process Vendor	Operator	
Process technology selection	P	S		S		Preproject analysis
Design of system involving new technology		S		P		Contingency allowance
Design errors and omissions		P				Insurance
Design changes	P	S		P		Contingency allowance
Ambiguous specifications and plans		P	S	S		Contingency allowance
Mechanical completion		S	P	S		Contingency allowance
Completion by date certain	S	S	P	S		Contingency allowance
Unknown site conditions	P	S	S			Preproject analysis and contingency
Unilateral owner directed changes	P					Contingency allowance
Natural disasters	P				S	Insurance
Court injunction, war, or civil disturbances	P					Contingency allowance
Patent infringement		S	S	P		Contingency allowance
Coordination of subcontractors and suppliers			P	S		Contingency, related project experience
Labor disputes	S		P	S		Contingency, related project experience
Labor productivity			P			Contingency, related project experience
Changes of law	P	S	S	S	S	Preproject analysis and contingency
Inability to meet performance specifications		S	S	P		Contingency allowance

P = Primary Responsibility, S = Secondary Responsibility

* - Based on participant best able to control events

IDENTIFIED RISK	METHOD OF TREATMENT			
I. NON-PERFORMANCE	RISK AVOIDANCE	RISK ABATEMENT	RISK RETENTION	RISK TRANSFER
A. Failure to enter into contract		1. Private Bid Openings		1. Surety Bid Bond 2. Monetary Deposit
B. Non-payment of creditors arising out of contract	1. Separate Contract Construction 2. Lien-Right Waiver 3. Prior Waiver 4. Joint Check 5. Deferred Payment	1. Payments Withheld Prior to Final Acceptance of Work (Sec. 29)* 2. Deferred Waiver 3. Retainage Percentage 4. Contractor Prequalification		1. Surety Payment Bond (Sec. 31) *
C. Failure to Complete Contract According to the Plans and Specifications		1. Contractor Pre-Qualification 2. Inspection of Work (Sec. 15)* 3. C. Q. C. - Contractor Quality Control 4. Deductions for Uncorrected Work (Sec. 21)* 5. Correction of Work Before Final Payment (Sec. 22) * 6. Payments Withheld Prior to Final Acceptance (Sec. 29)* 7. Retainage Percentage		1. Surety Performance Bond (Sec. 31) * 2. Warranty Clause
D. Untimely Completion		1. Alternate Completion Proposals 2. Bonus Clause Only	1. Extension of Time (Sec. 19) * 2. Force Majeure (Acts of God) Clause	1. Liquidated Damage Clause 2. No Damage Clause 3. Penalty Clause

Table 3.1 Identified Risks and Methods of Treatment

* From General and Special Conditions of Contract, A.G.C. Form 3, ASCE Form JCC-1

IDENTIFIED RISK	METHOD OF TREATMENT			
II. SITUATION CHANGES	RISK AVOIDANCE	RISK ABATEMENT	RISK RETENTION	RISK TRANSFER
A. Differing Site Conditions		1. More Thorough Site Investigation by Owner	1. Changed Conditions Clause (Sec. 8) * 2. Unit Price Contract	1. Familiarity with Work (Sec. 7) * 2. Information Disclaimer 3. Differing Site Condition Disclaimer 4. Lump Sum Contract
B. Changes During Construction		1. Changes in Work (Sec. 18) * 2. Claims (Sec. 20) * 3. Suspension of Work (Sec. 23) * 4. Owner's Right to Terminate Contract (Sec.24)*	1. Contractor's Right to Stop Work or Terminate Contract (Sec. 25) * 2. Claims (Sec. 20) * 3. Changes in Work (Sec. 18) *	
III. COST OF DISPUTE SETTLEMENT		1. Engineer's Decision (Sec. 38) * 2. Requirement for Arbitration (Sec. 39) *		

IDENTIFIED RISK	METHOD OF TREATMENT			
IV. LIABILITY LOSSES	RISK AVOIDANCE	RISK ABATEMENT	RISK RETENTION	RISK TRANSFER
A. Bodily Injury		1. Safety Program	1. Deductible Insurance	1. Owner's Insurance (Sec. 32)* 2. Contractor's Insurance (Sec. 30)* 3. Indemnification (Sec. 4.18) 4. Protection of the Public and of Work and Property (Sec. 14)*
B. Property Damage		1. Safety Program	1. Deductible Insurance	1. Owner's Insurance (Sec. 3.2) 2. Contractors Insurance (Sec. 30)* 3. Indemnification (Sec. 4.18) 4. Protection of the Public and of Work and Property (Sec. 14)*
V. DAMAGE TO PROJECT DURING CONSTRUCTION		1. Safety Program	1. Deductible Insurance 2. Partial Completion and Acceptance (Sec. 28)*	1. Owner's Insurance (Sec. 32)* 2. Indemnification (Sec. 30)* 3. Protection of the Public and of Work and Property (Sec.14) 4. Responsibility for Work (Sec. 27)* 5. Contractor's Insurance (Sec. 30)*

APPENDIX B

AIA DOCUMENT A201

AIA Document A201

General Conditions of the Contract for Construction

THIS DOCUMENT HAS IMPORTANT LEGAL CONSEQUENCES; CONSULTATION WITH AN ATTORNEY IS ENCOURAGED WITH RESPECT TO ITS MODIFICATION

1987 EDITION

TABLE OF ARTICLES

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CONTRACTOR

ADMINISTRATION OF THE CONTRACT

SUBCONTRACTORS

CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

CHANGES IN THE WORK

8. TIME

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11. INSURANCE AND BONDS

12. UNCOVERING AND CORRECTION OF WORK

13. MISCELLANEOUS PROVISIONS

14. TERMINATION OR SUSPENSION OF THE CONTRACT

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ARTICLE 1

GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents consist of the Agreement between Owner and Contractor (hereinafter the Agreement), Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include other documents such as bidding requirements (advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or portions of addenda relating to bidding requirements).

1.1.2 THE CONTRACT

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Architect and Contractor, (2) between the Owner and a Subcontractor or Subsubcontractor or (3) between any persons or entities other than the Owner and Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

1.1.3 THE WORK

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

1.1.4 THE PROJECT

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner or by separate contractors.

1.1.5 THE DRAWINGS

The Drawings are the graphic and pictorial portions of the Contract Documents, wherever located and whenever issued, showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

1.1.6 THE SPECIFICATIONS

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, construction systems, standards and workmanship for the Work, and performance of related services.

1.1.7 THE PROJECT MANUAL

The Project Manual is the volume usually assembled for the Work which may include the bidding requirements, sample forms, Conditions of the Contract and Specifications.

1.2 EXECUTION, CORRELATION AND INTENT

1.2.1 The Contract Documents shall be signed by the Owner and Contractor as provided in the Agreement. If either the Owner or Contractor or both do not sign all the Contract Documents, the Architect shall identify such unsigned Documents upon request.

1.2.2 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

1.2.3 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the intended results.

1.2.4 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

1.2.5 Unless otherwise stated in the Contract Documents, words which have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

1.3 OWNERSHIP AND USE OF ARCHITECT'S DRAWINGS, SPECIFICATIONS AND OTHER DOCUMENTS

1.3.1 The Drawings, Specifications and other documents prepared by the Architect are instruments of the Architect's service through which the Work to be executed by the Contractor is described. The Contractor may retain one contract record set. Neither the Contractor nor any Subcontractor, Subsubcontractor or material or equipment supplier shall own or claim a copyright in the Drawings, Specifications and other documents prepared by the Architect, and unless otherwise indicated the Architect shall be deemed the author of them and will retain all common law, statutory and other reserved rights, in addition to the copyright. All copies of them, except the Contractor's record set, shall be returned or suitably accounted for to the Architect, on request, upon completion of the Work. The Drawings, Specifications and other documents prepared by the Architect, and copies thereof furnished to the Contractor, are for use solely with respect to this Project. They are not to be used by the Contractor or any Subcontractor, Subsubcontractor or material or equipment supplier on other projects or for additions to this Project outside the scope of the

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ork without the specific written consent of the Owner and chitect. The Contractor, Subcontractors, Sub-subcontractors d material or equipment suppliers are granted a limited ense to use and reproduce applicable portions of the Draw-gs, Specifications and other documents prepared by the chitect appropriate to and for use in the execution of their ork under the Contract Documents. All copies made under s license shall bear the statutory copyright notice, if any, own on the Drawings, Specifications and other documents epared by the Architect. Submittal or distribution to meet ficial regulatory requirements or for other purposes in con-ction with this Project is not to be construed as publication derogation of the Architect's copyright or other reserved hts.

1 CAPITALIZATION

1.1 Terms capitalized in these General Conditions include ose which are (1) specifically defined, (2) the titles of num-red articles and identified references to Paragraphs, Subpara-aphs and Clauses in the document or (3) the titles of other cuments published by the American Institute of Architects.

5 INTERPRETATION

5.1 In the interest of brevity the Contract Documents fre-ently omit modifying words such as "all" and "any" and arti-s such as "the" and "an," but the fact that a modifier or an icle is absent from one statement and appears in another is t intended to affect the interpretation of either statement.

ARTICLE 2

OWNER

1 DEFINITION

1.1 The Owner is the person or entity identified as such in e Agreement and is referred to throughout the Contract cuments as if singular in number. The term "Owner" means e Owner or the Owner's authorized representative.

1.2 The Owner upon reasonable written request shall furnish the Contractor in writing information which is necessary and evant for the Contractor to evaluate, give notice of or force mechanic's lien rights. Such information shall include a rrect statement of the record legal title to the property on nich the Project is located, usually referred to as the site, and e Owner's interest therein at the time of execution of the greement and, within five days after any change, information such change in title, recorded or unrecorded.

2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

2.1 The Owner shall, at the request of the Contractor, prior execution of the Agreement and promptly from time to time ereafter, furnish to the Contractor reasonable evidence that ancial arrangements have been made to fulfill the Owner's bligations under the Contract. *[Note: Unless such reasonable idence were furnished on request prior to the execution of e Agreement, the prospective contractor would not be quired to execute the Agreement or to commence the Work.]*

2.2 The Owner shall furnish surveys describing physical aracteristics, legal limitations and utility locations for the site the Project, and a legal description of the site.

2.3 Except for permits and fees which are the responsibility the Contractor under the Contract Documents, the Owner all secure and pay for necessary approvals, easements, assess-ments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

2.2.4 Information or services under the Owner's control shall be furnished by the Owner with reasonable promptness to avoid delay in orderly progress of the Work.

2.2.5 Unless otherwise provided in the Contract Documents, the Contractor will be furnished, free of charge, such copies of Drawings and Project Manuals as are reasonably necessary for execution of the Work.

2.2.6 The foregoing are in addition to other duties and responsibilities of the Owner enumerated herein and especially those in respect to Article 6 (Construction by Owner or by Separate Contractors), Article 9 (Payments and Completion) and Article 11 (Insurance and Bonds).

2.3 OWNER'S RIGHT TO STOP THE WORK

2.3.1 If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents as required by Paragraph 12.2 or persistently fails to carry out Work in accordance with the Contract Documents, the Owner, by written order signed personally or by an agent specifically so empowered by the Owner in writing, may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Subparagraph 6.1.3.

2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

2.4.1 If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may after such seven-day period give the Contractor a second written notice to correct such deficiencies within a second seven-day period. If the Contractor within such second seven-day period after receipt of such second notice fails to commence and continue to correct any deficiencies, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the cost of correcting such deficiencies, including compensation for the Architect's additional services and expenses made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3

CONTRACTOR

3.1 DEFINITION

3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Contractor" means the Contractor or the Contractor's authorized representative.

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3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

3.2.1 The Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by the Owner pursuant to Subparagraph 2.2.2 and shall at once report to the Architect errors, inconsistencies or omissions discovered. The Contractor shall not be liable to the Owner or Architect for damage resulting from errors, inconsistencies or omissions in the Contract Documents unless the Contractor recognized such error, inconsistency or omission and knowingly failed to report it to the Architect. If the Contractor performs any construction activity knowing it involves a recognized error, inconsistency or omission in the Contract Documents without such notice to the Architect, the Contractor shall assume appropriate responsibility for such performance and shall bear an appropriate amount of the attributable costs for correction.

3.2.2 The Contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents before commencing activities. Errors, inconsistencies or omissions discovered shall be reported to the Architect at once.

3.2.3 The Contractor shall perform the Work in accordance with the Contract Documents and submittals approved pursuant to Paragraph 3.12.

3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless Contract Documents give other specific instructions concerning these matters.

3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons performing portions of the Work under a contract with the Contractor.

3.3.3 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons other than the Contractor.

3.3.4 The Contractor shall be responsible for inspection of portions of Work already performed under this Contract to determine that such portions are in proper condition to receive subsequent Work.

3.4 LABOR AND MATERIALS

3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

3.4.2 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Contract. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.

3.5 WARRANTY

3.5.1 The Contractor warrants to the Owner and Architect t materials and equipment furnished under the Contract will e of good quality and new unless otherwise required or perr ted by the Contract Documents, that the Work will be fe from defects not inherent in the quality required or permitt and that the Work will conform with the requirements of e Contract Documents. Work not conforming to these requ ments, including substitutions not properly approved a authorized, may be considered defective. The Contracto warranty excludes remedy for damage or defect caused abuse, modifications not executed by the Contractor, impro or insufficient maintenance, improper operation, or norr wear and tear under normal usage. If required by the Archite the Contractor shall furnish satisfactory evidence as to the ki and quality of materials and equipment.

3.6 TAXES

3.6.1 The Contractor shall pay sales, consumer, use and simi taxes for the Work or portions thereof provided by the Co tractor which are legally enacted when bids are received negotiations concluded, whether or not yet effective or mer scheduled to go into effect.

3.7 PERMITS, FEES AND NOTICES

3.7.1 Unless otherwise provided in the Contract Documen the Contractor shall secure and pay for the building permit a other permits and governmental fees, licenses and inspectio necessary for proper execution and completion of the Wo which are customarily secured after execution of the Contr and which are legally required when bids are received or neg tiations concluded.

3.7.2 The Contractor shall comply with and give notic required by laws, ordinances, rules, regulations and lawf orders of public authorities bearing on performance of th Work.

3.7.3 It is not the Contractor's responsibility to ascertain th the Contract Documents are in accordance with applicab laws, statutes, ordinances, building codes, and rules and regul tions. However, if the Contractor observes that portions of th Contract Documents are at variance therewith, the Contracto shall promptly notify the Architect and Owner in writing, an necessary changes shall be accomplished by appropria Modification.

3.7.4 If the Contractor performs Work knowing it to be cor trary to laws, statutes, ordinances, building codes, and rules an regulations without such notice to the Architect and Owne the Contractor shall assume full responsibility for such Wor and shall bear the attributable costs.

3.8 ALLOWANCES

3.8.1 The Contractor shall include in the Contract Sum a allowances stated in the Contract Documents. Items covere by allowances shall be supplied for such amounts and by suc persons or entities as the Owner may direct, but the Contracto shall not be required to employ persons or entities agains which the Contractor makes reasonable objection.

3.8.2 Unless otherwise provided in the Contract Documents

.1 materials and equipment under an allowance shall b selected promptly by the Owner to avoid delay in th Work;

.2 allowances shall cover the cost to the Contractor o materials and equipment delivered at the site and a required taxes, less applicable trade discounts;

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.3 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum and not in the allowances;

.4 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Clause 3.8.2.2 and (2) changes in Contractor's costs under Clause 3.8.2.3.

3 SUPERINTENDENT

3.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case.

10 CONTRACTOR'S CONSTRUCTION SCHEDULES

10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

10.2 The Contractor shall prepare and keep current, for the Architect's approval, a schedule of submittals which is coordinated with the Contractor's construction schedule and allows the Architect reasonable time to review submittals.

10.3 The Contractor shall conform to the most recent schedules.

11 DOCUMENTS AND SAMPLES AT THE SITE

11.1 The Contractor shall maintain at the site for the Owner one record copy of the Drawings, Specifications, addenda, change Orders and other Modifications, in good order and marked currently to record changes and selections made during construction, and in addition approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect and shall be delivered to the Architect for submittal to the Owner upon completion of the Work.

12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

12.3 Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. The purpose of their submittal is to demonstrate for those portions of the Work for which submittals are required the way the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents. Review by the Architect is subject to the limitations of Subparagraph 4.2.7.

3.12.5 The Contractor shall review, approve and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. Submittals made by the Contractor which are not required by the Contract Documents may be returned without action.

3.12.6 The Contractor shall perform no portion of the Work requiring submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect. Such Work shall be in accordance with approved submittals.

3.12.7 By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

3.12.8 The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and the Architect has given written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect's approval thereof.

3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Architect on previous submittals.

3.12.10 Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents.

3.12.11 When professional certification of performance criteria of materials, systems or equipment is required by the Contract Documents, the Architect shall be entitled to rely upon the accuracy and completeness of such calculations and certifications.

3.13 USE OF SITE

3.13.1 The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

3.14 CUTTING AND PATCHING

3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly.

3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the

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Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

3.15 CLEANING UP

3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work the Contractor shall remove from and about the Project waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials.

3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the cost thereof shall be charged to the Contractor.

3.16 ACCESS TO WORK

3.16.1 The Contractor shall provide the Owner and Architect access to the Work in preparation and progress wherever located.

3.17 ROYALTIES AND PATENTS

3.17.1 The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect.

3.18 INDEMNIFICATION

3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including loss of use resulting therefrom, but only to the extent caused in whole or in part by negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Paragraph 3.18.

3.18.2 In claims against any person or entity indemnified under this Paragraph 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under this Paragraph 3.18 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.

3.18.3 The obligations of the Contractor under this Paragraph 3.18 shall not extend to the liability of the Architect, the Architect's consultants, and agents and employees of any of the arising out of (1) the preparation or approval of maps, drawing opinions, reports, surveys, Change Orders, designs or specific tions, or (2) the giving of or the failure to give directions instructions by the Architect, the Architect's consultants, ar agents and employees of any of them provided such giving failure to give is the primary cause of the injury or damage.

ARTICLE 4

ADMINISTRATION OF THE CONTRACT

4.1 ARCHITECT

4.1.1 The Architect is the person lawfully licensed to practi architecture or an entity lawfully practicing architecture ide tified as such in the Agreement and is referred to throughou the Contract Documents as if singular in number. The ter "Architect" means the Architect or the Architect's authorize representative.

4.1.2 Duties, responsibilities and limitations of authority of th Architect as set forth in the Contract Documents shall not b restricted, modified or extended without written consent of th Owner, Contractor and Architect. Consent shall not be unre sonably withheld.

4.1.3 In case of termination of employment of the Architec the Owner shall appoint an architect against whom the Co tractor makes no reasonable objection and whose status und the Contract Documents shall be that of the former architec

4.1.4 Disputes arising under Subparagraphs 4.1.2 and 4.1. shall be subject to arbitration.

4.2 ARCHITECT'S ADMINISTRATION OF THE CONTRACT

4.2.1 The Architect will provide administration of the Contrac as described in the Contract Documents, and will be th Owner's representative (1) during construction, (2) until fina payment is due and (3) with the Owner's concurrence, fron time to time during the correction period described in Para graph 12.2. The Architect will advise and consult with th Owner. The Architect will have authority to act on behalf of th Owner only to the extent provided in the Contract Documents unless otherwise modified by written instrument in accordanc with other provisions of the Contract.

4.2.2 The Architect will visit the site at intervals appropriate t the stage of construction to become generally familiar with th progress and quality of the completed Work and to determin in general if the Work is being performed in a manner indicat ing that the Work, when completed, will be in accordance wit the Contract Documents. However, the Architect will not b required to make exhaustive or continuous on-site inspection to check quality or quantity of the Work. On the basis of on site observations as an architect, the Architect will keep th Owner informed of progress of the Work, and will endeavor t guard the Owner against defects and deficiencies in the Work

4.2.3 The Architect will not have control over or charge of and will not be responsible for construction means, methods techniques, sequences or procedures, or for safety precaution and programs in connection with the Work, since these are solely the Contractor's responsibility as provided in Paragraph 3.3. The Architect will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Con-

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ractor, Subcontractors, or their agents or employees, or of any other persons performing portions of the Work.

.2.4 Communications Facilitating Contract Administration. Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate through the Architect. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

.2.5 Based on the Architect's observations and evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

.2.6 The Architect will have authority to reject Work which does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable for implementation of the intent of the Contract Documents, the Architect will have authority to require additional inspection or testing of the Work in accordance with Subparagraphs 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons performing portions of the Work.

.2.7 The Architect will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken with such reasonable promptness as to cause no delay in the Work or in the activities of the Owner, Contractor or separate contractors, while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Paragraphs 3.3, 3.5 and 3.12. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Paragraph 7.4.

.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion, will receive and forward to the Owner for the Owner's review and records written warranties and related documents required by the Contract and assembled by the Contractor, and will issue a final Certificate for Payment upon compliance with the requirements of the Contract Documents.

.2.10 If the Owner and Architect agree, the Architect will provide one or more project representatives to assist in carrying out the Architect's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

4.2.11 The Architect will interpret and decide matters concerning performance under and requirements of the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made with reasonable promptness and within any time limits agreed upon. If no agreement is made concerning the time within which interpretations required of the Architect shall be furnished in compliance with this Paragraph 4.2, then delay shall not be recognized on account of failure by the Architect to furnish such interpretations until 15 days after written request is made for them.

4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions so rendered in good faith.

4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

4.3 CLAIMS AND DISPUTES

4.3.1 Definition. A Claim is a demand or assertion by one of the parties seeking, as a matter of right, adjustment or interpretation of Contract terms, payment of money, extension of time or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. Claims must be made by written notice. The responsibility to substantiate Claims shall rest with the party making the Claim.

4.3.2 Decision of Architect. Claims, including those alleging an error or omission by the Architect, shall be referred initially to the Architect for action as provided in Paragraph 4.4. A decision by the Architect, as provided in Subparagraph 4.4.4, shall be required as a condition precedent to arbitration or litigation of a Claim between the Contractor and Owner as to all such matters arising prior to the date final payment is due, regardless of (1) whether such matters relate to execution and progress of the Work or (2) the extent to which the Work has been completed. The decision by the Architect in response to a Claim shall not be a condition precedent to arbitration or litigation in the event (1) the position of Architect is vacant, (2) the Architect has not received evidence or has failed to render a decision within agreed time limits, (3) the Architect has failed to take action required under Subparagraph 4.4.4 within 30 days after the Claim is made, (4) 45 days have passed after the Claim has been referred to the Architect or (5) the Claim relates to a mechanic's lien.

4.3.3 Time Limits on Claims. Claims by either party must be made within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later. Claims must be made by written notice. An additional Claim made after the initial Claim has been implemented by Change Order will not be considered unless submitted in a timely manner.

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4.3.4 Continuing Contract Performance. Pending final resolution of a Claim including arbitration, unless otherwise agreed in writing the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

4.3.5 Waiver of Claims: Final Payment. The making of final payment shall constitute a waiver of Claims by the Owner except those arising from:

.1 liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;

.2 failure of the Work to comply with the requirements of the Contract Documents; or

.3 terms of special warranties required by the Contract Documents.

4.3.6 Claims for Concealed or Unknown Conditions. If conditions are encountered at the site which are (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, then notice by the observing party shall be given to the other party promptly before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall so notify the Owner and Contractor in writing, stating the reasons. Claims by either party in opposition to such determination must be made within 21 days after the Architect has given notice of the decision. If the Owner and Contractor cannot agree on an adjustment in the Contract Sum or Contract Time, the adjustment shall be referred to the Architect for initial determination, subject to further proceedings pursuant to Paragraph 4.4.

4.3.7 Claims for Additional Cost. If the Contractor wishes to make Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Paragraph 10.3. If the Contractor believes additional cost is involved for reasons including but not limited to (1) a written interpretation from the Architect, (2) an order by the Owner to stop the Work where the Contractor was not at fault, (3) a written order for a minor change in the Work issued by the Architect, (4) failure of payment by the Owner, (5) termination of the Contract by the Owner, (6) Owner's suspension or (7) other reasonable grounds, Claim shall be filed in accordance with the procedure established herein.

4.3.8 Claims for Additional Time

4.3.8.1 If the Contractor wishes to make Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary.

4.3.8.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time and could not have been reasonably anticipated, and that weather conditions had an adverse effect on the scheduled construction.

4.3.9 Injury or Damage to Person or Property. If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, of any of the other party's employees or agents, or of others for whose acts such party is legally liable, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after first observance. The notice shall provide sufficient detail to enable the other party to investigate the matter. If a Claim for additional cost or time related to this Claim is to be asserted, it shall be filed as provided in Subparagraphs 4.3.7 or 4.3.8.

4.4 RESOLUTION OF CLAIMS AND DISPUTES

4.4.1 The Architect will review Claims and take one or more of the following preliminary actions within ten days of receipt of a Claim: (1) request additional supporting data from the claimant, (2) submit a schedule to the parties indicating when the Architect expects to take action, (3) reject the Claim in whole or in part, stating reasons for rejection, (4) recommend approval of the Claim by the other party or (5) suggest a compromise. The Architect may also, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim.

4.4.2 If a Claim has been resolved, the Architect will prepare or obtain appropriate documentation.

4.4.3 If a Claim has not been resolved, the party making the Claim shall, within ten days after the Architect's preliminary response, take one or more of the following actions: (1) submit additional supporting data requested by the Architect, (2) modify the initial Claim or (3) notify the Architect that the initial Claim stands.

4.4.4 If a Claim has not been resolved after consideration of the foregoing and of further evidence presented by the parties or requested by the Architect, the Architect will notify the parties in writing that the Architect's decision will be made within seven days, which decision shall be final and binding on the parties but subject to arbitration. Upon expiration of such time period, the Architect will render to the parties the Architect's written decision relative to the Claim, including any change in the Contract Sum or Contract Time or both. If there is a surety and there appears to be a possibility of a Contractor's default, the Architect may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

4.5 ARBITRATION

4.5.1 Controversies and Claims Subject to Arbitration. Any controversy or Claim arising out of or related to the Contract, or the breach thereof, shall be settled by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association, and judgment upon the award rendered by the arbitrator or arbitrators may be entered in any court having jurisdiction thereof, except controversies or Claims relating to aesthetic effect and except those waived as provided for in Subparagraph 4.3.5. Such controversies or Claims upon which the Architect has given notice and rendered a decision as provided in Subparagraph 4.4.4 shall be subject to arbitration upon written demand of either party. Arbitration may be commenced when 45 days have passed after a Claim has been referred to the Architect as provided in Paragraph 4.3 and no decision has been rendered.

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.5.2 Rules and Notices for Arbitration. Claims between the)wner and Contractor not resolved under Paragraph 4.4 shall, subject to arbitration under Subparagraph 4.5.1, be decided y arbitration in accordance with the Construction Industry rbitration Rules of the American Arbitration Association cur- ently in effect, unless the parties mutually agree otherwise. lotice of demand for arbitration shall be filed in writing with ne other party to the Agreement between the Owner and Con- ractor and with the American Arbitration Association, and a opy shall be filed with the Architect.

.5.3 Contract Performance During Arbitration. During arbi- ration proceedings, the Owner and Contractor shall comply vith Subparagraph 4.3.4.

.5.4 When Arbitration May Be Demanded. Demand for arbi- ration of any Claim may not be made until the earlier of (1) the late on which the Architect has rendered a final written deci- ion on the Claim, (2) the tenth day after the parties have pre- ented evidence to the Architect or have been given reasonable pportunity to do so, if the Architect has not rendered a final vritten decision by that date, or (3) any of the five events lescribed in Subparagraph 4.3.2.

.5.4.1 When a written decision of the Architect states that (1) he decision is final but subject to arbitration and (2) a demand or arbitration of a Claim covered by such decision must be nade within 30 days after the date on which the party making he demand receives the final written decision, then failure to lemand arbitration within said 30 days' period shall result in he Architect's decision becoming final and binding upon the)wner and Contractor. If the Architect renders a decision after rbitration proceedings have been initiated, such decision may e entered as evidence, but shall not supersede arbitration pro- eedings unless the decision is acceptable to all parties oncerned.

.5.4.2 A demand for arbitration shall be made within the time mits specified in Subparagraphs 4.5.1 and 4.5.4 and Clause .5.4.1 as applicable, and in other cases within a reasonable ime after the Claim has arisen, and in no event shall it be made fter the date when institution of legal or equitable proceedings ased on such Claim would be barred by the applicable statute f limitations as determined pursuant to Paragraph 13.7.

.5.5 Limitation on Consolidation or Joinder. No arbitration rising out of or relating to the Contract Documents shall nclude, by consolidation or joinder or in any other manner, he Architect, the Architect's employees or consultants, except y written consent containing specific reference to the Agree- nent and signed by the Architect, Owner, Contractor and any ther person or entity sought to be joined. No arbitration shall nclude, by consolidation or joinder or in any other manner, arties other than the Owner, Contractor, a separate contrac- or as described in Article 6 and other persons substantially nvolved in a common question of fact or law whose presence s required if complete relief is to be accorded in arbitration. No erson or entity other than the Owner, Contractor or a separate ontractor as described in Article 6 shall be included as an orig- nal third party or additional third party to an arbitration whose nterest or responsibility is insubstantial. Consent to arbitration nvolving an additional person or entity shall not constitute onsent to arbitration of a dispute not described therein or with person or entity not named or described therein. The fore- oing agreement to arbitrate and other agreements to arbitrate vith an additional person or entity duly consented to by parties o the Agreement shall be specifically enforceable under appli- able law in any court having jurisdiction thereof.

4.5.6 Claims and Timely Assertion of Claims. A party who files a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded. When a party fails to include a Claim through oversight, inadvertence or excusable neglect, or when a Claim has matured or been acquired subsequently, the arbitrator or arbitrators may permit amendment.

4.5.7 Judgment on Final Award. The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

ARTICLE 5

SUBCONTRACTORS

5.1 DEFINITIONS

5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Architect will promptly reply to the Contractor in writing stating whether or not the Owner or the Architect, after due investigation, has reasonable objection to any such proposed person or entity. Failure of the Owner or Architect to reply promptly shall constitute notice of no reasonable objection.

5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. The Contract Sum shall be increased or decreased by the difference in cost occasioned by such change and an appropriate Change Order shall be issued. However, no increase in the Contract Sum shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

5.2.4 The Contractor shall not change a Subcontractor, person or entity previously selected if the Owner or Architect makes reasonable objection to such change.

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5.3 SUBCONTRACTUAL RELATIONS

5.3.1 By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities which the Contractor, by these Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement which may be at variance with the Contract Documents. Subcontractors shall similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner provided that:

.1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Paragraph 14.2 and only for those subcontract agreements which the Owner accepts by notifying the Subcontractor in writing; and

.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

5.4.2 If the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted.

ARTICLE 6

CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided elsewhere in the Contract Documents.

6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules when directed to do so. The Contractor shall make any revisions to the construction schedule and Contract Sum deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised.

6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights which apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10, 11 and 12.

6.2 MUTUAL RESPONSIBILITY

6.2.1 The Contractor shall afford the Owner and separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner's or separate contractors' completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

6.2.3 Costs caused by delays or by improperly timed activities or defective construction shall be borne by the party responsible therefor.

6.2.4 The Contractor shall promptly remedy damage wrongfully caused by the Contractor to completed or partially completed construction or to property of the Owner or separate contractors as provided in Subparagraph 10.2.5.

6.2.5 Claims and other disputes and matters in question between the Contractor and a separate contractor shall be subject to the provisions of Paragraph 4.3 provided the separate contractor has reciprocal obligations.

6.2.6 The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Paragraph 3.14.

6.3 OWNER'S RIGHT TO CLEAN UP

6.3.1 If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish as described in Paragraph 3.15, the Owner may clean up and allocate the cost among those responsible as the Architect determines to be just.

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ARTICLE 7

CHANGES IN THE WORK

7.1 CHANGES

7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor and Architect; a Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect alone.

7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.

7.1.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are so changed in a proposed Change Order or Construction Change Directive that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

7.2 CHANGE ORDERS

7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor and Architect, stating their agreement upon all of the following:

.1 a change in the Work;

.2 the amount of the adjustment in the Contract Sum, if any; and

.3 the extent of the adjustment in the Contract Time, if any.

7.2.2 Methods used in determining adjustments to the Contract Sum may include those listed in Subparagraph 7.3.3.

7.3 CONSTRUCTION CHANGE DIRECTIVES

7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

.1 mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;

.2 unit prices stated in the Contract Documents or subsequently agreed upon;

.3 cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or

.4 as provided in Subparagraph 7.3.6.

7.3.4 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

7.3.5 A Construction Change Directive signed by the Contractor indicates the agreement of the Contractor therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

7.3.6 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the method and the adjustment shall be determined by the Architect on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, a reasonable allowance for overhead and profit. In such case, and also under Clause 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Subparagraph 7.3.6 shall be limited to the following:

.1 costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' or workmen's compensation insurance;

.2 costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;

.3 rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;

.4 costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and

.5 additional costs of supervision and field office personnel directly attributable to the change.

7.3.7 Pending final determination of cost to the Owner, amounts not in dispute may be included in Applications for Payment. The amount of credit to be allowed by the Contractor to the Owner for a deletion or change which results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

7.3.8 If the Owner and Contractor do not agree with the adjustment in Contract Time or the method for determining it, the adjustment or the method shall be referred to the Architect for determination.

7.3.9 When the Owner and Contractor agree with the determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and shall be recorded by preparation and execution of an appropriate Change Order.

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7.4 MINOR CHANGES IN THE WORK

7.4.1 The Architect will have authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order and shall be binding on the Owner and Contractor. The Contractor shall carry out such written orders promptly.

ARTICLE 8

TIME

8.1 DEFINITIONS

8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

8.1.2 The date of commencement of the Work is the date established in the Agreement. The date shall not be postponed by the failure to act of the Contractor or of persons or entities for whom the Contractor is responsible.

8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Paragraph 9.8.

8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

8.2 PROGRESS AND COMPLETION

8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor. The date of commencement of the Work shall not be changed by the effective date of such insurance. Unless the date of commencement is established by a notice to proceed given by the Owner, the Contractor shall notify the Owner in writing not less than five days or other agreed period before commencing the Work to permit the timely filing of mortgages, mechanic's liens and other security interests.

8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

8.3 DELAYS AND EXTENSIONS OF TIME

8.3.1 If the Contractor is delayed at any time in progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner, or by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control, or by delay authorized by the Owner pending arbitration, or by other causes which the Architect determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.

8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Paragraph 4.3.

8.3.3 This Paragraph 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9

PAYMENTS AND COMPLETION

9.1 CONTRACT SUM

9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

9.2 SCHEDULE OF VALUES

9.2.1 Before the first Application for Payment, the Contractor shall submit to the Architect a schedule of values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

9.3 APPLICATIONS FOR PAYMENT

9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment for operations completed in accordance with the schedule of values. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and reflecting retainage if provided for elsewhere in the Contract Documents.

9.3.1.1 Such applications may include requests for payment on account of changes in the Work which have been properly authorized by Construction Change Directives but not yet included in Change Orders.

9.3.1.2 Such applications may not include requests for payment of amounts the Contractor does not intend to pay to a Subcontractor or material supplier because of a dispute or other reason.

9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

9.4 CERTIFICATES FOR PAYMENT

9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either issue to the

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Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Subparagraph 9.5.1.

9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's observations at the site and the data comprising the Application for Payment, that the Work has progressed to the point indicated and that, to the best of the Architect's knowledge, information and belief, quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to minor deviations from the Contract Documents correctable prior to completion and to specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

9.5 DECISIONS TO WITHHOLD CERTIFICATION

9.5.1 The Architect may decide not to certify payment and may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Subparagraph 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Subparagraph 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also decide not to certify payment or, because of subsequently discovered evidence or subsequent observations, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss because of:

- **.1** defective Work not remedied;
- **.2** third party claims filed or reasonable evidence indicating probable filing of such claims;
- **.3** failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;
- **.4** reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- **.5** damage to the Owner or another contractor;
- **.6** reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- **.7** persistent failure to carry out the Work in accordance with the Contract Documents.

9.5.2 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

9.6 PROGRESS PAYMENTS

9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

9.6.2 The Contractor shall promptly pay each Subcontractor, upon receipt of payment from the Owner, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of such Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in similar manner.

9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

9.6.4 Neither the Owner nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor except as may otherwise be required by law.

9.6.5 Payment to material suppliers shall be treated in a manner similar to that provided in Subparagraphs 9.6.2, 9.6.3 and 9.6.4.

9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

9.7 FAILURE OF PAYMENT

9.7.1 If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the Architect or awarded by arbitration, then the Contractor may, upon seven additional days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, which shall be accomplished as provided in Article 7.

9.8 SUBSTANTIAL COMPLETION

9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use.

9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected. The Contractor shall proceed promptly to complete and correct items on the list. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or desig-

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nated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not in accordance with the requirements of the Contract Documents, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. The Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion. When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate.

9.8.3 Upon Substantial Completion of the Work or designated portion thereof and upon application by the Contractor and certification by the Architect, the Owner shall make payment, reflecting adjustment in retainage, if any, for such Work or portion thereof as provided in the Contract Documents.

9.9 PARTIAL OCCUPANCY OR USE

9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Subparagraph 11.3.11 and authorized by public authorities having jurisdiction over the Work. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Subparagraph 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

9.10 FINAL COMPLETION AND FINAL PAYMENT

9.10.1 Upon receipt of written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection and, when the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's observations and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in said final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Subparagraph 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be cancelled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of claims. The making of final payment shall constitute a waiver of claims by the Owner as provided in Subparagraph 4.3.5.

9.10.4 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment. Such waivers shall be in addition to the waiver described in Subparagraph 4.3.5.

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ARTICLE 10

PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

10.1.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract.

10.1.2 In the event the Contractor encounters on the site material reasonably believed to be asbestos or polychlorinated biphenyl (PCB) which has not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner and Architect in writing. The Work in the affected area shall not thereafter be resumed except by written agreement of the Owner and Contractor if in fact the material is asbestos or polychlorinated biphenyl (PCB) and has not been rendered harmless. The Work in the affected area shall be resumed in the absence of asbestos or polychlorinated biphenyl (PCB), or when it has been rendered harmless, by written agreement of the Owner and Contractor, or in accordance with final determination by the Architect on which arbitration has not been demanded, or by arbitration under Article 4.

10.1.3 The Contractor shall not be required pursuant to Article 7 to perform without consent any Work relating to asbestos or polychlorinated biphenyl (PCB).

10.1.4 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Architect, Architect's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material is asbestos or polychlorinated biphenyl (PCB) and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including loss of use resulting therefrom, but only to the extent caused in whole or in part by negligent acts or omissions of the Owner, anyone directly or indirectly employed by the Owner or anyone for whose acts the Owner may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Subparagraph 10.1.4.

10.2 SAFETY OF PERSONS AND PROPERTY

10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to:

.1 employees on the Work and other persons who may be affected thereby;

.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and

.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

10.2.2 The Contractor shall give notices and comply with applicable laws, ordinances, rules, regulations and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Clauses 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Clauses 10.2.1.2 and 10.2.1.3, except damage or loss attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Paragraph 3.18.

10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

10.2.7 The Contractor shall not load or permit any part of the construction or site to be loaded so as to endanger its safety.

10.3 EMERGENCIES

10.3.1 In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Paragraph 4.3 and Article 7.

ARTICLE 11

INSURANCE AND BONDS

11.1 CONTRACTOR'S LIABILITY INSURANCE

11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

.1 claims under workers' or workmen's compensation, disability benefit and other similar employee benefit acts which are applicable to the Work to be performed;

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.2 claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;

.3 claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;

.4 claims for damages insured by usual personal injury liability coverage which are sustained (1) by a person as a result of an offense directly or indirectly related to employment of such person by the Contractor, or (2) by another person;

.5 claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;

.6 claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle; and

.7 claims involving contractual liability insurance applicable to the Contractor's obligations under Paragraph 3.18.

11.1.2 The insurance required by Subparagraph 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from date of commencement of the Work until date of final payment and termination of any coverage required to be maintained after final payment.

11.1.3 Certificates of Insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work. These Certificates and the insurance policies required by this Paragraph 11.1 shall contain a provision that coverages afforded under the policies will not be cancelled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. If any of the foregoing insurance coverages are required to remain in force after final payment and are reasonably available, an additional certificate evidencing continuation of such coverage shall be submitted with the final Application for Payment as required by Subparagraph 9.10.2. Information concerning reduction of coverage shall be furnished by the Contractor with reasonable promptness in accordance with the Contractor's information and belief.

11.2 OWNER'S LIABILITY INSURANCE

11.2.1 The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance. Optionally, the Owner may purchase and maintain other insurance for self-protection against claims which may arise from operations under the Contract. The Contractor shall not be responsible for purchasing and maintaining this optional Owner's liability insurance unless specifically required by the Contract Documents.

11.3 PROPERTY INSURANCE

11.3.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance in the amount of the initial Contract Sum as well as subsequent modifications thereto for the entire Work at the site on a replacement cost basis without voluntary deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Paragraph 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Paragraph 11.3 to be covered, whichever is earlier. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Work.

11.3.1.1 Property insurance shall be on an all-risk policy form and shall insure against the perils of fire and extended coverage and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, false-work, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's services and expenses required as a result of such insured loss. Coverage for other perils shall not be required unless otherwise provided in the Contract Documents.

11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance which will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor, then the Owner shall bear all reasonable costs properly attributable thereto.

11.3.1.3 If the property insurance requires minimum deductibles and such deductibles are identified in the Contract Documents, the Contractor shall pay costs not covered because of such deductibles. If the Owner or insurer increases the required minimum deductibles above the amounts so identified or if the Owner elects to purchase this insurance with voluntary deductible amounts, the Owner shall be responsible for payment of the additional costs not covered because of such increased or voluntary deductibles. If deductibles are not identified in the Contract Documents, the Owner shall pay costs not covered because of deductibles.

11.3.1.4 Unless otherwise provided in the Contract Documents, this property insurance shall cover portions of the Work stored off the site after written approval of the Owner at the value established in the approval, and also portions of the Work in transit.

11.3.2 Boiler and Machinery Insurance. The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

11.3.3 Loss of Use Insurance. The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or for other special hazards be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

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11.3.5 If during the Project construction period the Owner insures properties, real or personal or both, adjoining or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Subparagraph 11.3.7 for damages caused by fire or other perils covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Paragraph 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be cancelled or allowed to expire until at least 30 days' prior written notice has been given to the Contractor.

11.3.7 Waivers of Subrogation. The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other perils to the extent covered by property insurance obtained pursuant to this Paragraph 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

11.3.8 A loss insured under Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Subparagraph 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

11.3.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or in accordance with an arbitration award in which case the procedure shall be as provided in Paragraph 4.5. If after such loss no other special agreement is made, replacement of damaged property shall be covered by appropriate Change Order.

11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection be made, arbitrators shall be chosen as provided in Paragraph 4.5. The Owner as fiduciary shall, in that case, make settlement with insurers in accordance with directions of such arbitrators. If distribution of insurance proceeds by arbitration is required, the arbitrators will direct such distribution.

11.3.11 Partial occupancy or use in accordance with Paragraph 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

11.4 PERFORMANCE BOND AND PAYMENT BOND

11.4.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall permit a copy to be made.

ARTICLE 12

UNCOVERING AND CORRECTION OF WORK

12.1 UNCOVERING OF WORK

12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the Architect, be uncovered for the Architect's observation and be replaced at the Contractor's expense without change in the Contract Time.

12.1.2 If a portion of the Work has been covered which the Architect has not specifically requested to observe prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be charged to the Owner. If such Work is not in accordance with the Contract Documents, the Contractor shall pay such costs unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

12.2 CORRECTION OF WORK

12.2.1 The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether observed before or after Substantial Completion and whether or not fabricated, installed or completed. The Contractor shall bear costs of correcting such rejected Work, including additional testing and inspections and compensation for the Architect's services and expenses made necessary thereby.

12.2.2 If, within one year after the date of Substantial Completion of the Work or designated portion thereof, or after the date

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for commencement of warranties established under Subparagraph 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. This period of one year shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work. This obligation under this Subparagraph 12.2.2 shall survive acceptance of the Work under the Contract and termination of the Contract. The Owner shall give such notice promptly after discovery of the condition.

12.2.3 The Contractor shall remove from the site portions of the Work which are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

12.2.4 If the Contractor fails to correct nonconforming Work within a reasonable time, the Owner may correct it in accordance with Paragraph 2.4. If the Contractor does not proceed with correction of such nonconforming Work within a reasonable time fixed by written notice from the Architect, the Owner may remove it and store the salvable materials or equipment at the Contractor's expense. If the Contractor does not pay costs of such removal and storage within ten days after written notice, the Owner may upon ten additional days' written notice sell such materials and equipment at auction or at private sale and shall account for the proceeds thereof, after deducting costs and damages that should have been borne by the Contractor, including compensation for the Architect's services and expenses made necessary thereby. If such proceeds of sale do not cover costs which the Contractor should have borne, the Contract Sum shall be reduced by the deficiency. If payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.

12.2.5 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work which is not in accordance with the requirements of the Contract Documents.

12.2.6 Nothing contained in this Paragraph 12.2 shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the time period of one year as described in Subparagraph 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

12.3 ACCEPTANCE OF NONCONFORMING WORK

12.3.1 If the Owner prefers to accept Work which is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13

MISCELLANEOUS PROVISIONS

13.1 GOVERNING LAW

13.1.1 The Contract shall be governed by the law of the place where the Project is located.

13.2 SUCCESSORS AND ASSIGNS

13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to the other party hereto and to partners, successors, assigns and legal representatives of such other party in respect to covenants, agreements and obligations contained in the Contract Documents. Neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

13.3 WRITTEN NOTICE

13.3.1 Written notice shall be deemed to have been duly served if delivered in person to the individual or a member of the firm or entity or to an officer of the corporation for which it was intended, or if delivered at or sent by registered or certified mail to the last business address known to the party giving notice.

13.4 RIGHTS AND REMEDIES

13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

13.4.2 No action or failure to act by the Owner, Architect or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in writing.

13.5 TESTS AND INSPECTIONS

13.5.1 Tests, inspections and approvals of portions of the Work required by the Contract Documents or by laws, ordinances, rules, regulations or orders of public authorities having jurisdiction shall be made at an appropriate time. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so the Architect may observe such procedures. The Owner shall bear costs of tests, inspections or approvals which do not become requirements until after bids are received or negotiations concluded.

13.5.2 If the Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Subparagraph 13.5.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so the Architect may observe such procedures.

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The Owner shall bear such costs except as provided in Subparagraph 13.5.3.

13.5.3 If such procedures for testing, inspection or approval under Subparagraphs 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, the Contractor shall bear all costs made necessary by such failure including those of repeated procedures and compensation for the Architect's services and expenses.

13.5.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

13.5.5 If the Architect is to observe tests, inspections or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

13.6 INTEREST

13.6.1 Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

13.7 COMMENCEMENT OF STATUTORY LIMITATION PERIOD

13.7.1 As between the Owner and Contractor:

.1 **Before Substantial Completion.** As to acts or failures to act occurring prior to the relevant date of Substantial Completion, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than such date of Substantial Completion;

.2 **Between Substantial Completion and Final Certificate for Payment.** As to acts or failures to act occurring subsequent to the relevant date of Substantial Completion and prior to issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of issuance of the final Certificate for Payment; and

.3 **After Final Certificate for Payment.** As to acts or failures to act occurring after the relevant date of issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of any act or failure to act by the Contractor pursuant to any warranty provided under Paragraph 3.5, the date of any correction of the Work or failure to correct the Work by the Contractor under Paragraph 12.2, or the date of actual commission of any other act or failure to perform any duty or obligation by the Contractor or Owner, whichever occurs last.

ARTICLE 14

TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 TERMINATION BY THE CONTRACTOR

14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor, for any of the following reasons:

.1 issuance of an order of a court or other public authority having jurisdiction;

.2 an act of government, such as a declaration of national emergency, making material unavailable;

.3 because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Subparagraph 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents;

.4 if repeated suspensions, delays or interruptions by the Owner as described in Paragraph 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less; or

.5 the Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Subparagraph 2.2.1.

14.1.2 If one of the above reasons exists, the Contractor may, upon seven additional days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed and for proven loss with respect to materials, equipment, tools, and construction equipment and machinery, including reasonable overhead, profit and damages.

14.1.3 If the Work is stopped for a period of 60 days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has persistently failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Subparagraph 14.1.2.

14.2 TERMINATION BY THE OWNER FOR CAUSE

14.2.1 The Owner may terminate the Contract if the Contractor:

.1 persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials;

.2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;

.3 persistently disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction; or

.4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

14.2.2 When any of the above reasons exist, the Owner, upon certification by the Architect that sufficient cause exists to jus-

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tify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

.1 take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;

.2 accept assignment of subcontracts pursuant to Paragraph 5.4; and

.3 finish the Work by whatever reasonable method the Owner may deem expedient.

14.2.3 When the Owner terminates the Contract for one of the reasons stated in Subparagraph 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Architect, upon application, and this obligation for payment shall survive termination of the Contract.

14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

14.3.2 An adjustment shall be made for increases in the cost of performance of the Contract, including profit on the increased cost of performance, caused by suspension, delay or interruption. No adjustment shall be made to the extent:

.1 that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or

.2 that an equitable adjustment is made or denied under another provision of this Contract.

14.3.3 Adjustments made in the cost of performance may have a mutually agreed fixed or percentage fee.

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APPENDIX C

SUMMARY OF CONTRACTING ARRANGEMENTS

Excerpted from: Papageorge, Thomas E., Risk Management for Building Professionals (Kingston, MA: R. S. Means Company Inc., 1988), p. 144.

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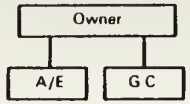
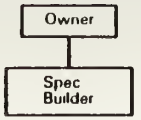
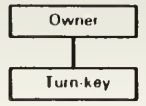
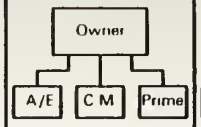
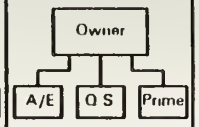
Descriptions							
Contract Type	Competitive Bid (Lump Sum)	Negotiated (Lump Sum)	N/A	N/A	Usually Negotiated	Usually Competitive Bid	Usually Competitive Bid
Owner's Input	High	High	Low	High	High	High	High
Risk	Low	Low	Low	High	Low	Medium to High	Medium to High
Public Owner in Marketplace a Few Times	Yes	Cannot Use by Law	Purchase After Constr. Is Complete	Cannot Use by Law	Cannot Use by Law	Yes	Yes
In Marketplace Many Times	Yes	Cannot Use by Law	Purchase After Constr. Is Complete	Cannot Use by Law	Cannot Use by Law	Yes	Yes
Private Owner in Marketplace a Few Times	Yes	Yes	Purchase During or After Construction	N/A	Yes	Yes	Yes
In Marketplace Many Times	Yes	Yes	Purchase During or After Construction	N/A	Yes	Yes	Yes
Contractor's Input Into Design	Low	High to Low	High	High	High	Low	Low
Risk	High	High	High	High	High	High	Medium
Architect's Input Into Design	High	High	High	High	High	High	High
Risk	High	High	High	High	High	High	High

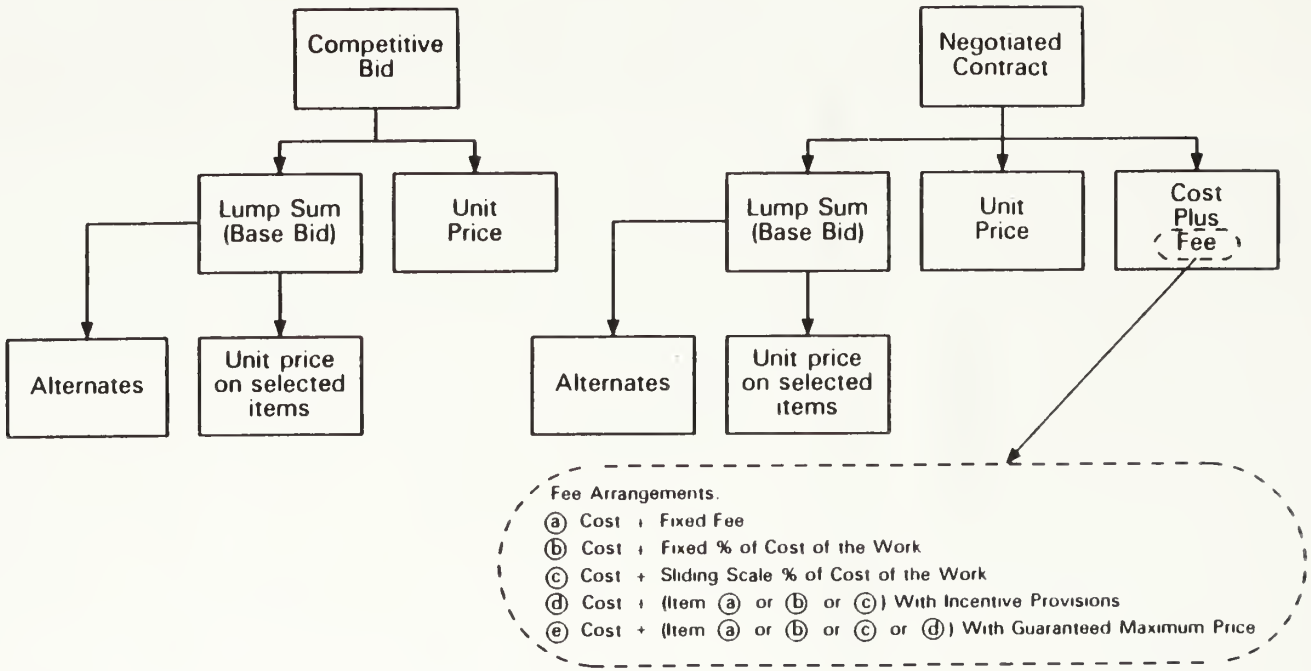
A/E = Architect or Engineer Q.S. = Quantity Surveyor
Prime = Prime Contractor C.M. = Pure Construction Manager
G.C. = General Contractor

Risks Associated with Methods by Which Owners Purchase Construction

APPENDIX D

SUMMARY OF BASIC CONTRACT TYPES

Excerpted from: Papageorge, Thomas E., Risk Management for Building Professionals (Kingston, MA: R. S. Means Company Inc., 1988), p. 160.


Competitive Bid
Lump Sum (Base Bid)
Unit Price
Alternates
Unit price on selected items
Negotiated Contract
Lump Sum (Base Bid)
Unit Price
Cost Plus Fee
Alternates
Unit price on selected items
Fee Arrangements.
ⓐ Cost + Fixed Fee
ⓑ Cost + Fixed % of Cost of the Work
ⓒ Cost + Sliding Scale % of Cost of the Work
ⓓ Cost + (Item ⓐ or ⓑ or ⓒ) With Incentive Provisions
ⓔ Cost + (Item ⓐ or ⓑ or ⓒ or ⓓ) With Guaranteed Maximum Price

Basic Contract Types

APPENDIX E

RISKS ASSOCIATED WITH CONTRACT TYPE

Excerpted from: Papageorge, Thomas E., Risk Management for Building Professionals (Kingston, MA: R. S. Means Company Inc., 1988), p. 161.

Risk Based on Contract Type

Type of Contract	Competitive Bid		Negotiated Contracts					
					Cost Plus Fee			
	Lump Sum	Unit Price	Lump Sum	Unit Price	Cost + Fixed Fee	Cost + Fee = % of Work	Cost + Fee = Sliding Scale % of Work	Cost + Fee With Guaranteed Max Price
Owner's Risk Based on Final Project Cost Overruns	Low	Low to High	Low	Low to High	High	High	High	Low
Owner's Risk Based on Responsibility for Means, Methods, and Techniques of Construction	Low	Low	Low	Low	Low	Low	Low	Low
Contractor's Risk Related to Project Cost Overruns	High	Low to Med	High	Low to Med	Low	Very Low	Low	Med to High
Contractor's Risk Based on Responsibility for Means, Methods, and Techniques of Construction	High	High	High	High	High	High	High	High

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